THE PERCEPTIONS OF PRIMARY HEALTHCARE CLINIC NURSES ON IMPLEMENTATION OF STANDARD PRECAUTIONS, IN LERIBE DISTRICT LESOTHO

SEBUENG TSITA

Thesis presented in partial fulfilment of the requirements

for the degree of Master of Nursing Science

in the Faculty of Medicine and Health Sciences

Stellenbosch University

Supervisor: Mrs Loraine Schutte

Co-supervisor: Dr Janet Bell

March 2021

DECLARATION

By submitting this thesis electronically, I declare that the entirety of the work contained herein is my own original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third party rights and that I have not previously, in its entirety or in part, submitted it for obtaining any qualification.

Date: 16 February 2021

ABSTRACT

Background: Healthcare professionals are faced with the occupational risk of exposure to microorganisms in their daily routine work, leading to the acquision of healthcare associated infections. Suboptimal compliance to standard safety precautions, as the major infection prevention measures, was identified globally to be the major cause of healthcare associated infections affecting healthcare workers and, consequently, the patients. This study aimed to explore the perceptions of the nurses, the clinical healthcare providers at the clinics in Lesotho, on the implementation of standard precautions as protective measures against infections, in order to ensure safety in primary healthcare clinics.

Methods: To explore the perceptions of primary healthcare nurses on the implementation of standard precautions in their workplace, individual interviews were conducted with participants from four purposefully selected clinics. Three participants from each of the three different nursing cadres were selected, adding up to a total of twelve participants. To establish these perceptions, understanding of standard precautions, individual practices as well as potential barriers to implementation of standard precautions were explored. Creswell's method of data analysis was followed to reach the study objectives of this qualitative descriptive study.

Results: Findings of this study reflect the participants' adequate understanding of standard precautions among the participants, although standard precautions are not adequately enforced through training and supervision. Moreover, standard precautions are not adhered to as recommended and the barriers hindering adequate implementation of standard precautions, such as infrastructure limitations, procurement issues, cultural issues, work situations and discomfort were identified.

Conclusion: There is a need to enforce the standard precautions through training and supportive supervision, whilst the guideline and operating procedure development can be followed to improve the consistent implementation of standard precautions. Procurement of adequate supply of equipment is also necessary in improving compliance to standard precautions.

Key words: Standard precautions, healthcare associated infections, complience with standard precautions, healthcare workers and standard precautions, occupational exposure.

OPSOMMING

Agtergrond: Professionele gesondheidswerkers staar die beroepsrisiko van blootstelling aan mikro-organismes in hulle daaglikse roetine werk in die gesig, wat tot die verkryging van gesondheidsorg geassosieerde infeksies lei. Suboptimale onderworpenheid aan die standaard voorkomingsmaatreëls om veiligheid te verseker, soos die meting van hoofinfeksies, is wêreldwyd geïdentifiseer as die hoofoorsaak van gesondheidsorg geassosieerde infeksies wat gesondheidswerkers affekteer en gevolglik ook die pasiënte. Die doel van hierdie studie is om die persepsies van verpleegsters, die kliniese gesondheidsverskaffers by die klinieke in Lesotho te ondersoek, oor die implementering van standaard voorkomingsmaatreëls as beskermende maatreëls teen infeksies om veiligheid in primêre gesondheidsorg klinieke te verseker.

Metodes: Om die persepsies van primêre gesondheidsorg verpleegsters oor die implementering van standaard voorkomingsmaatreëls in hulle werkplek te ondersoek, is individuele onderhoude gedoen met deelnemers van vier doelbewus geselekteerde klinieke. Drie deelnemers vanuit elk van die drie verskillende verpleegkaders is geselekteer wat ‘n totaal van twaalf uitmaak. Om hierdie persepsies te bepaal, is die begrip van standaard voorkomingsmaatreëls, individuele praktyke, asook potensiële hindernisse vir die implementering van standaard voorkomingsmaatreëls ondersoek. Creswell se metode vir data-analise is gevolg om die studie se doelwitte van hierdie kwalitatiewe bekrywende studie te bereik.

Resultate: Bevindings van hierdie studie het die deelnemers se voldoende begrip van die standaard voorkomingsmaatreëls onder deelnemers gereflekteer, alhoewel die standaard voorkomingsmaatreëls nie genoegsaam afgedwing is deur opleiding en toesighouding nie. Bowendien is standaard voorkomingsmaatreëls nie nagekom soos aanbeveel nie en die hindernisse wat voldoende implementering van standaard voorkomingsmaatreëls verhoed, soos infrastruktuurbeperkinge, verkrygingskwessies, kulturele kwessies, werksituasies en ongerief is geïdentifiseeer.

Gevolgtrekking: Daar is ‘n behoefte om die standaard voorkomingsmaatreëls deur opleiding en ondersteunende toesighouding af te dwing, terwyl die riglyne en operasionele ontwikkelingsprosedure gevolg kan word om volgehoue implementering van standaard voorkomingsmaatreëls te verbeter. Verskaffing van voldoende voorsiening van toerusting is ook nodig om te voldoen aan standaard voorkomingsmaatreëls.

Sleutelwoorde: Standaard voorkomingsmaatreëls, gesondheidsorg geassosieerde infeksies, voldoening aan standaard voorkomingsmaatreëls, gesondheidsorgwerkers, beroepsblootstelling.

ACKNOWLEDGEMENTS

I would like to express my sincere thanks to the Almighty God for the strength and courage that He gave me to carry out this study.

Special thanks to Mrs Loraine Schutte and Dr Janet Bell for their unending patience and guidance throughout the study.

My thanks go to my mother, my entire family and friends who supported me throughout the course of my study encouraging me and studying with me sometimes.

Mr Makoae Mathaha, Mr Thabo Nthako, Ms Mojabeng Moholi and most importantly the study participants spent their time and input in this study. I thank them heartily.

Sincere thanks to the language and technical editor Professor Francina Moloi

TABLE OF CONTENTS

LIST OF TABLES

Appendices

ABBREVIATION

IPC	INFECTION PREVENTION AND CONTROL
CDC	CENTER FOR DISEASE CONTROL
HAI	HEALTHCARE ASSOCIATED INFECTIONS
HIV	HUMAN IMMUNODEFICIENCY VIRUS
PHC	PRIMARY HEALTH CARE
PPE	PERSONAL PROTECTIVE EQUIPMENT
TB	TUBERCULOSIS
WHO	WORLD HEALTH ORGANIZATION

CHAPTER 1
FOUNDATION OF THE STUDY

1.1 INTRODUCTION

Standard precautions are evidence-based clinical practices designed by the Centre for Disease Control (CDC) in 1996, to prevent the transmission of microorganisms in the healthcare setting and to protect both the healthcare worker and the patient from healthcare associated infections (HAIs) (Health Services Executive, 2009:3). In the current global COVID-19 pandemic, the importance of routine application of standard precautions became even more pronounced (WHO, 2020).

Standard precautions are the basic infection control measures applied when caring for every patient irrespective of their infection status, to protect the healthcare workers and prevent them from transmitting infections to the patients (Punia, Nair, & Shetty, 2014:1). Standard precautions include hand hygiene, proper use of personal protective equipment, needle safety, proper sharps and clinical waste disposal, and proper handling and disinfection of potentially infectious equipment or surfaces, including cough etiquette and ventilation (Center for Disease Control, 2019:68-69).

Healthcare professionals are faced with the occupational risk of exposure to microorganisms in their daily routine work. This may lead to healthcare-associated infections. The exposure can occur through contact transmission, airborne transmission, droplet transmission, percutenious exposure and mucous membrane exposure (Efstathiou, Papastavrou, Raftopoulos & Merkouris, 2011:1). The risk of exposure to these micoorganisms is reported more among the nurses than any other healthcare workers, due to the nature of their job, which keeps them in close contact with the patients all the time and carrying out procedures that put them at risk (Nderitu, Mill, & Richter, 2015:625).

The World Health Organisation (WHO) estimates about three million exposures to occupational infections among healthcare workers (Reda, Fisseha, Mengistie, & Vandeweerd, 2010:1). Ninety percent of those infections are reported in developing countries, especially in sub-Saharan Africa as there is a high prevalence of Human Immunodeficiency virus (HIV) infection, which is one of the most common occupational infections (Reda et al., 2010:1). The risk of exposure is also due to the reported poor compliance to standard precautions in the region, due to the scarcity of resources and difficult working conditions (Ndejjo, Musinguzi, Yu, Buregyeya, Musoke, Wang, Halage, Whalen, Bazeyo, Williams & Ssempebwa, 2015:5).

The application of infection prevention principles, including standard precautions, became more evident during the current COVID-19 pandemic. In the global COVID-19 pandemic, over 90 000 infections were reported among healthcare workers within four months of identification of the virus, even though it is believed that cases are under reported (International Council of Nurses, 2020). A study in the United States of America reported 3-11% of confirmed COVID-19 cases to be among the healthcare workers while a report from Lesotho displayed 17.6% (CDC, 2020; Ministry of Health Lesotho, 2020).

The CDC introduced standard precautions to control the risk of exposure of healthcare workers to occupational infections and to prevent cross transmition of infections to patients. However occupational exposure to infections among healthcare workers and healthcare associated infections remain an issue of great concern, as compliance to standard precautions is reported to be low (Efstathiou et al., 2011:1). Measures of infection prevention and occupational safety are generally low in sub-Saharan Africa leading to the reported high burden of occupational infections in the region (Rothe, Schlaich, & Thompson, 2013:260).

The Ministry of Health Lesotho developed policies and guidelines such as; infection control policy and guidelines and healthcare waste management guidelines, to mitigate transmission of infections in the healthcare sector. The guidelines include standard precautions activities and are expected to be implemented by healthcare workers at all healthcare settings in Lesotho (Ministry of Health and Social welfare Lesotho , 2012:41-48). However, no literature could be found on the implementation thereof in Lesotho.

This study was intended to explore the perceptions of the nurses, the frontline healthcare service providers in Lesotho, at the primary healthcare clinics, on their implementation of the standard precautions.

1.2 RATIONALE

Lesotho is a small developing country in sub-Saharan Africa with an estimated population of 2.26 million (World Population Review, 2019). The healthcare system is such that there is one referral hospital, three specialized hospitals, 18 district hospitals, three filter clinics and 188 health centers/clinics distributed across the ten districts of the country (National Health Strategic Plan 2017-2022, 2016:9). The Nurse-driven healthcare system in the clinics has between four and six nursing personnel in each clinic (“Lesotho Public Health Sector Expenditure Review,” 2017:21). Of those, there are at least three registered nurse midwives and two nursing assistants, with a nurse clinician in selected clinics to provide all primary health and maternity services day and night. The country is

declared a human resource crisis country in terms of healthcare provision. The ratio of staff to population is 0.9 doctors and 10.2 nurse-midwifes to 10 000 people. This is far below WHO AFRO regional average of 2.6 and 12.0 respectively ("Lesotho Public Helth Sector Expenditure Review," 2017:21).

As a registered nurse working at the clinic, the researcher observed regular exposure of nurses to percutaneous, mucus membrane, airborne and droplet exposure to infections due to the limited use of personal protective equipment (PPE). Lesotho has a high prevalence of HIV and is ranked number two in the world (AVERT, 2018), whilst tuberculosis (TB) is ranked number one (Mugomeri Chatanga, Lefunyane, Ruhanya, Nyandoro & Chin'ombe, 2015:735). This burden of infectious diseases together with a shortage of staff put healthcare workers at a high risk of occupational exposure to infections.

No literature could be found on either occupational exposure or infections among healthcare workers in Lesotho or on the implementation of standard precautions. However, limited literature on infection control practices in Lesotho was found. Maroldi, Felix, LDias, Kawagoe, Padoveze, Ferreira, Mascarenhas, Timmons and Figueiredo (2017:1), identified that occupational infections and standard precautions have been studied mostly in hospital settings, yet the problem exists in all the health care settings. This scarcity of literature in Lesotho, specifically in the primary care setting, suggested the need for an in-depth understanding of the matter at that level of healthcare service provision. A qualitative study was therefore proposed to explore the perceptions of the nurses at the primary care clinics on their implementation of standard precautions in the Leribe district which is a highly populated district with a high burden of infectious diseases ("Lesotho Population and Housing Census," 2016:26).

1.3 PROBLEM STATEMENT

Healthcare workers worldwide are faced with an occupational risk of exposure to pathogens through contact with human body fluids. Three million exposures are estimated annually, however the global burden of occupational exposure to injury among healthcare workers is not known (Auta, Adewuyi, Tor-Anyiin, Aziz, Ogbole, Ogbonna & Adeloye, 2017:831). In sub-Saharan Africa, compliance with implementation of infection prevention and occupational safety measures is reported to be low. That, together with the high prevalence of infectious diseases in the region leads to a high burden of occupational infections (Rothe et al., 2013:1). This was reiterated by the current COVID-19 pandemic, about 17.6% of new infections in Lesotho were with the healthcare workers within three months of the first identified case of COVID-19 in the country (Ministry of Health Lesotho, 2020).

Despite the introduction of standard precautions and other infection control measures globally, healthcare associated infections remain an issue of concern in the health sector, affecting healthcare workers and, consequently, the patients. Suboptimal compliance to standard precautions was identified by several studies as the main cause of the problem globally (Punia et al., 2014:1). Most studies have explored this matter in a hospital setting, with limited literature describing standard precautions and occupational infections in primary healthcare settings, yet occupational exposure is present in all healthcare settings (Maroldi et al., 2017:1). In the primary healthcare clinics of the Leribe District, there are a lot of verbally reported exposures to infections among healthcare workers.

In primary healthcare, there is also a risk of contact, airborne and droplet transmission of infections. This study was intended to explore the perceptions of the nurses as the clinical healthcare providers at the clinics in Lesotho, on their implementation of standard precautions as protective measures against infections in order to ensure safety in primary healthcare clinics.

1.4 RESEARCH QUESTION

What are the perceptions of primary healthcare clinic nurses on their implementation of standard precautions?

1.5 RESEARCH AIM

To explore the perceptions of primary healthcare clinic nurses on their implementation of standard precautions.

1.6 RESEARCH OBJECTIVES

- To explore the nurses' understanding of standard precautions in daily clinical practice.
- To describe the nurses' current practices with regard to the implementation of standard precautions in daily clinical practice.
- To explain the barriers identified by the nurses to their implementation of standard precautions in daily clinical practice.

1.7 RESEARCH METHODOLOGY

A brief explanation of the research methodology of the study is presented, followed by a detailed discussion of the methodology in Chapter Three.

1.7.1 RESEARCH DESIGN

A qualitative approach with an exploratory, descriptive design was followed to achieve the objectives of the study. This design is a systematic subjective approach used to explore, describe and understand the experiences or perceptions of the persons in the situation (Burns & Grove, 2011:57). A qualitative descriptive design enabled the exploration of the perceptions of primary healthcare clinic nurses on their implementation of standard precautions.

1.7.2 Study setting

The study was conducted at four primary healthcare clinics in the Leribe district in Lesotho.

1.7.3 Population and sampling

The study population was all the nursing personnel at the clinics in the Leribe district, Lesotho, including nurse clinicians, registered nurses, midwifes and nursing assistants. This is because all the nurses are equally exposed to occupational infections and are equally expected to implement the standard precautions.

Purposive sampling was used to select twelve participants, three participants from each of the four clinics.

1.7.4 Data collection tool

Individual interviews with participants were held to collect data using a semi-structured interview guide (Appendix 1) that was developed by the researcher, based on the objectives of the study

1.7.5 Pilot interview

A pilot interview is a trial run conducted before the full study to pre-test the research instrument. It determines the adequacy and necessity of interview questions and replies. It tests whether the interview guide will gather all the required information and assesses the length of time needed to conduct each interview (Dikko, 2016:522). A pilot interview was conducted with a person who met the study inclusion criteria at one of the clinics to assess the adequacy of the research interview questions. This data was included in the study findings.

1.7.6 Trustworthiness

Trustworthiness is the determination of the rigor of a qualitative research to ensure that it is of a high quality, through evaluating the credibility, transferability, dependability and confirmability of the study findings and conclusions (Guba & Lincoln, 1985:329). It ensures truthfulness, reliability and neutrality

of the findings and whether they can be generalized to similar settings or situations (Guba & Lincoln, 1985:329). How trustworthiness of this research was acquired will be discussed in Chapter Three.

1.7.7 Data collection

Data was collected at four primary healthcare clinics in Leribe district, Lesotho in August 2019. When permission had been obtained from Stellenbosch University HREC (Appendix 2) and Lesotho HREC (Appendix 3), the researcher visited the clinics to recruit the participants. The nurses in charge of the clinics were asked for permission to conduct the study at their respective facilities. Potential participants were approached individually, informed about the study and asked for consent to participate voluntarily. Those who agreed to participate were given consent forms to fill in and asked for a suitable date and time for the interview. The interviews were conducted and audio recorded by the researcher using a semi-structured interview guide.

1.7.8 Data analysis

Data analysis in qualitative research is done in conjunction with data collection, as participants express their views and experiences, the researcher was already trying to understand the phenomena being studied (Burns & Grove, 2011:88). In this study, the audio recorded interviews were transcribed by a trained person. Creswell's (2014:247-250) approach of data analysis was used. It has six steps:

Organise and prepare the data for analysis

Read though all the data

Code data

Use codes to describe the setting or people and develop categories or themes for analysis

Present the results of the analysis

Interpret the results of the analysis

A comprehensive discussion on the research methodology of the study will be presented in chapter three.

1.8 ETHICAL CONSIDERATIONS

Ethics in research involves protecting human rights, balancing the risks and benefits, understanding informed consent and understanding institutional review of research (Mack, Woodsong, MacQueen, Guest, & Namey, 2005:8). It also deals with misconduct such as data fabrication, falsification of data and plagiarism in conducting research (Burns & Grove, 2011:94-95). Ethics in research was observed

through the use of the Nuremberg Code and the declaration of Helsinki (U.S. Department of Health and Human Services, Office of Human Research Protection (OHRP), 2013).

The study was reviewed by the Health Research Ethics Committee of Stellenbosch University (Appendix 2). Approval from the Lesotho Health Research Committee (Appendix 3) and permission of the District Health Management Team were obtained. The Consent of the participants were also obtained (Appendix 4). The following ethical principles were observed for each individual participant in the study.

The declaration of Helsinki: is about ensuring that the researcher protects the life, privacy, health and dignity of the participants. It emphasizes the importance of risk-benefit analysis so that the study may not be conducted if the risks outweigh the benefits (World Medical Association, 2008). To ensure that the study was beneficial and had minimal risks, ethical approval of the Stellenbosch University HREC and Lesotho HREC were obtained.

The Nuremberg Code: emphasises the importance of informed consent, ensuring that the study will be beneficial to the society, that it will minimize the risks to human subjects of the study and that it will use skilled personnel to conduct the study (U.S. Department of Health and Human Services, Office of Human Research Protection (OHRP). 2013). The District Health Management Team, the nurses in charge of the health facilities as well as the participants were informed about details and benefits of the study in order to acquire the consent to conduct the study

The ethical principle of autonomy: emphasizes respect of each individual human being, the realization that human beings have the basic rights such as the right to know, the right to healthcare and the right to make their own choices. Hence the need for them to give informed consent (Pera & Van Tonder, 2011:70-72). The participation in this study was voluntary and participants were informed about the details of the study and their choice to either agree or decline to participate without any discrimination. Informed consent forms were given to the volunteering individuals

Beneficence / Non-maleficence: are about expressing kindness and avoiding doing any physical, psychological, spiritual or emotional harm to the clients. Researchers look at minimization of risks and maximization of benefits of the study (Pera & Van Tonder, 2011:55). Confidentiality and comfort of clients was emphasized and ensured by letting the participants choose the places and times of interviews free of interruptions.

Principle of justice: This is the fair allocation and distribution of resources, sharing the burden of risks and benefits fairly among the participants without any discrimination (Pera & Van Tonder, 2011: 57-58). All the participants were given an equal opportunity to choose the time and place of the interview and were also given the same refreshments during the interviews.

1.9 DEFINITIONS OF TERMS

Perceptions: The way in which something is regarded, understood and interpreted (Oxford dictionary)

Nurse: A person registered with the Lesotho Nursing Council (LNC) to provide nursing services (Nurses and Midwives Act, 1998:106). For the purpose of this study, nurses include nurse clinicians, registered nurse midwives and nursing assistants.

Nurse clinician: Nurses registered with the Lesotho Nursing Council (LNC), for primary health care nursing (Nurses and Midwives Act, 1998:107).

Registered nurse midwives: Nurses registered with LNC for general nursing and midwifery (Nurses and Midwives Act, 1998:106).

Nursing assistant: Nursing personnel registered with LNC as nurse assistants (Nurses and Midwives Act, 1998:107).

Primary care clinics: Health care facilities that provide primary healthcare services (WHO, 2018). In Lesotho they are also known as Health Centers

Standard precautions: Basic infection control measures used in caring for every patient. They include hand hygiene, the use of PPE, Needle safety, cough etiquette, waste disposal, proper handling and disinfecting equipment and linen (CDC, 2016).

1.10 DURATION OF THE STUDY

Ethical approval from Stellenbosch University was obtained on the 10th June 2019 and that from the Ministry of Health Lesotho on the 17th June 2019. The pilot interview took place on the 12th July 2019.

Data collection and analysis lasted from 12th August 2019 to 11th November 2019

The final thesis was submitted for examination on the 30th November 2020

1.11 CHAPTER OUTLINE

Chapter 1: Foundation of the study

Chapter one provides an introduction to the topic, the rationale for doing the study, the depth of the problem and a brief introduction about the research methodology. The foundation of the study is presented within the ethical considerations of the study.

Chapter 2: Literature review

Chapter two presents what is known and not known about the problem, looking at the relevant literature and the knowledge gap as it relates to the study aims and objectives

Chapter 3: Research methodology

Chapter three presents the details of how the study was carried out, the research design followed, the study setting, the methodology used to recruit participants, gather data and analyse it, how trustworthiness was achieved and ethics obtained and ensured.

Chapter 4: Results

The findings of the study, whether the aims and objectives of the study were met and the details of how primary care clinic nurses really perceive implementation of standard precautions is presented in chapter four.

Chapter 5: Discussion, conclusions and recommendations

In chapter five, the study findings are discussed in relation to what was known or not known about the topic, conclusions drawn from the study finding and recommendations made based on the study findings and available literature.

1.12 SIGNIFICANCE OF THE STUDY

The significance of the study is to comprehend the perceptions of primary healthcare clinic nurses regarding the application of the standard precautions and protecting their health and safety against biological hazards in their workplace. The study may add knowledge on whether primary care clinic nurses are well informed about the standard precautions, whether they comply and understand the importance of compliance to standard precautions. Any barriers to the implementation of standard precautions will also be identified. The findings may lead to the recommendations to improve the implementation of standard precautions in primary care clinics in Lesotho.

1.13 SUMMARY

Healthcare workers are exposed to biological hazards that may lead to occupational infections. Standard precautions were developed to reduce the exposure and transmission of pathogens but the problem persists. This study followed an exploratory descriptive qualitative research approach, to explore the perceptions of the nurses at the Leribe district clinics in Lesotho about the implementation of standard precautions. Four clinics were selected as the research sites using purposive sampling. Data was collected through individual interviews with the nurses at selected clinics. Chapter two presents the available literature, particularly as it relates to the aim and objectives of the study

1.14 CONCLUSION

This was a qualitative research study to explore the perceptions of primary healthcare clinic nurses on the implementation of standard precaution in their workplace in order to establish their safety against biological hazards. The following chapters review the literature and present the research methodology, the findings, the conclusions and the recommendations of the study.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

A literature review is a process of finding and critically appraising the relevant research reports in order to provide the background to the topic of interest. It contains current scientific and theoretical knowledge, identifying disagreements and gaps in knowledge about the topic and explaining the possible contribution of the present study to the knowledge base, thus justifying the need for further research on that specific topic (Burns & Grove, 2011:163).

A literature review in qualitative studies depends on the type of qualitative research to be conducted (Grove, Burns, & Gray, 2013:98). It can be either be done after data collection and analysis to prevent bias or at the beginning to establish the beginning point of inquiry. For exploratory-descriptive studies, the aim is to establish an understanding of the concept to be studied and also to provide the background for conducting the study and interpreting the finding (Grove et al., 2013:98).

The purpose of the literature review in this study was to provide the background to the standard precautions by discussing how standard precautions developed and describing the standard precautionary measures. It also aims to identify and discuss compliance to standard precautions and any factors which influence the implementation of standard precautions. This chapter depicts the standard precautions as a way to prevent the spread of infections within a healthcare setting, from a global, regional and national perspective.

2.2 SELECTING AND REVIEWING THE LITERATURE

The relevant sources of information were searched using the following databases; EBSCOhost, CINHAL, Google Scholar, Google search engine and PubMed. The following key words were used: standard precautions, compliance to standard precautions, occupational infections, healthcare associated infections, occupational exposure, healthcare workers and standard precautions, standard precautions in primary healthcare, infection prevention, needle stick injuries, injection safety and hand hygiene. Twenty four relevant articles were selected and were restricted to the current sources, not older than 10 years, to explore the latest information on the matter. However, the sources that describe

the standard precautions development were older as they elaborate on the evolution of the standard precautions which were developed decades ago.

The literature review provides a background to standard precautions, compliance to standard precautions and the factors that influence the implementation of standard precautions.

2.3 BACKGROUND OF STANDARD PRECAUTIONS

2.3.1 Progression of Standard Precautions

The need for infection prevention and control (IPC) in the healthcare sector can be traced back to the 18th century where “Isolation and cohort concept” evolved, introducing isolation of infected patients (CDC, 1996:53-80). In the early 19th century “Barrier nursing” was introduced. It included wearing barrier attire such as gowns, aseptic hand washing after contact with patients and disinfection of contaminated objects. In the 1970’s, safety requirements relating to needle stick injury prevention, prohibiting recap, reuse and purposely bending of needles before disposal in a properly labeled impermeable container were also added. (CDC, 1996:53-80).

In the 1980s, the healthcare system then focused on how healthcare personell can provide healthcare services to infected patients, while protecting themselves from acquiring the disease. This led to the introduction of “Universal precautions”. This suggests that blood and certain body fluids are potentially infectious for bloodborne pathogens therefore precautions should be applied to all the patients consistantly regardless of their bloodborne infection status (CDC, 1996:53-80).

Universal precautions were then revised to “Standard precautions” in 1996, to reduce transmission of blood borne and other pathogens in the healthcare sector (CDC, 2019:8). According to the standard precautions guidelines, all blood, body fluids, secretions, excretions (except sweat), mucus membrane and non-intact skin may contain transmittable infectious agents. Therefore they require protective barriers against them. Control of infections transmitted through other routes of transmission such as air and droplet transmission was also included in standard precautions. The application of standard precautions depends on the nature of worker-patient interaction and anticipated pathogen exposure. This means that the nature of the procedure performed dictates the precaution required (CDC, 2019:68).

Lesotho, like any other country, adopted infection control guidelines and standard precautions as it adopted any other international guidelines recommended by WHO. The infection control policy and

guidelines and healthcare waste management guidelines, were developed to mitigate the transmission of infections in the healthcare sector (MOH Lesotho, 2012:41-48). Globally, there is an increased focus on standard precautions after the discovery and progression of the new Corona virus (COVID-19). The WHO, (2020), emphasizes the components of the standard precautions to mitigate the infection rates in the healthcare sector and among the public.

2.3.2 Standard Precautions components

Standard precautions are a set of infection prevention measures applied by the healthcare workers to all the patients regardless of their infection status to control the spread of the infections in the health sector (CDC, 2019:68). They are designed to protect both the healthcare workers and patients from nosocomial infections (CDC, 1996:68). In this section, standard precautions practices are discussed together with the recommendations as to when and how each practice should be applied for a better understanding of these measures. According to CDC (2019:79-85), the standard precautions include

I. Hand hygiene
II. Proper use of personal protective equipment
III. Respiratory hygiene and cough etiquette
IV. Needle safety
V. Handling and disinfection of potentially infectious equipment and cleaning and disinfection of the environment
VI. Waste disposal
VII. Patient placement
VIII. Textile and laundry

For this study the focus will be on the first six standard precautionary measures because they are the most relevant in the primary healthcare sector in Lesotho. Each component will be discussed individually.

2.3.2.1 Hand hygiene:

Hand hygiene is an important standard precaution and a crucial practice to reduce the transmission of micro-organisms in the healthcare sector. It includes washing hands with soap and water or hand scrubbing with an alcohol based solution that does not require the use of water (CDC, 2019:50). Hand hygiene is recommended; before touching a patient, before a clean/aseptic procedure, after touching a patient after contact with body fluids, after contact with patients' surroundings and after removing gloves (CDC, 2019:50). In primary healthcare clinics, as in all healthcare settings, there is direct contact with patients and their surroundings, therefore hand hygiene should be implemented as recommended.

2.3.2.2 Personal protective equipment

These are a variety of barriers, or PPE, used to protect the mucous membrane, airway, skin and clothing from contact with infectious agents. The selection of which barriers to use depends on the nature of worker-patient interaction or the likely mode of transmission of infections (CDC, 2019:51). Protective attire include: gloves, face masks, eye ware/goggles, gowns/aprons, gumboots (Ministry of Health Lesotho, 2012:43). The Ministry of Health Lesotho (2012:41) declared that PPE is a legal requirement for every healthcare practitioner and should be provided by the employer with education on proper use and maintenance of each item.

Gloves:

Gloves are supposed to be worn when there is an anticipated risk of contact with blood, body fluids or other potentially infectious materials, mucous membrane, non-intact skin or potentially infectious intact skin. Gloves can also be used for cleaning the environment or medical equipment (CDC, 2019:51). They should be changed between different patients or during patient care if the hand will move from contaminated to clean body sides and they should not be re-used. They should also be removed after contact with patients or the surrounding environment, using a proper technique to prevent contamination (CDC, 2019:51).

Primary healthcare clinics in Lesotho provide services such as labour and deliveries, wound dressings and emergency care of wounds. When the risk of contact with blood or body fluids is anticipated, the use of gloves is recommended (CDC, 2019:51).

Face masks

Face masks provide a barrier to airborne or droplet transmissions between healthcare workers and clients and are also used to protect the mucous membrane of the mouth and nose from potential splashes of blood, body fluids, secretions and excretions. They should be changed in between patients or whenever they are wet or soiled with blood or body fluids, they are also given to coughing clients to prevent them from passing infections around (CDC, 2019:53-54). The risk of airborne and droplet infection is present in all healthcare settings, including primary healthcare clinics, hence the need for the use of face masks.

Eyewear/ goggles

Eyewear is used where there is potential risk of splashes or sprays of blood, body fluid, sections and excretions, to protect the mucous membrane of the eyes (CDC, 2019:54). Primary healthcare clinics in Lesotho provide services such as labour and delivery and laboratory test sample-taking that have the

potential risk of splashes and sprays of blood and body fluids. Goggles or other suitable eye protection are necessary (CDC 2019:54).

Gowns/aprons

Gowns or aprons are used for direct patient contact to protect the skin and prevent soiling or contamination of clothing during patient care. Gowns or aprons are also used when contact with blood, body fluids, sections and excretions are anticipated. Gowns or aprons should also be changed in between patients and should not be re-used even with repeated contact with the same patient (CDC, 2019:52-53).

Gumboots

Disposable overshoes/ boots are used to protect the healthcare personnel from spillage of blood. They are mostly used in operating theatres where a lot of spillage of blood is anticipated (Massinga, 2012:21). There is spillage of blood and body fluids during labour and delivery, wound dressing and emergency care services which are provided in Primary healthcare clinics in Lesotho. They necessitate the use of gumboots (WHO, 2014:7).

2.3.2.3 Respiratory hygiene and cough etiquette

Respiratory hygiene or cough etiquette are control measures to prevent droplet and contact transmission of respiratory pathogens by containing the respiratory sections. This is done through the education of both healthcare workers and communities on the ventilation of crowded facilities by opening windows and doors, screening and triage of coughing clients and providing them with masks at healthcare facilities. Other recommended measures include ensuring the practice of proper coughing technique which is covering both nose and mouth while coughing or sneezing, preferably with tissue paper or coughing into the elbow or upper arm (if there is no tissue available) and performing hand hygiene after coughing, sneezing or using tissue (CDC, 2016).

Respiratory hygiene was emphasised during the current COVID-19 pandemic, underlying the need to educate healthcare workers and patients about aspects such as couch etiquette, especially in indoor/poorly ventilated spaces (WHO Interim Guidelines, 2020b).

2.3.2.4 Needle safety

Needle safety practice is the proper handling and disposal of needles and sharp objects to prevent injuries and transmission of blood borne infectious agents. There should be no harm to patients, no exposure to avoidable harm for healthcare providers and nothing should result in dangerous waste to

others in a way that may harm their health and safety (Gadzama, Bawa, Ajinoma, Saidu, & Umar, 2014:134). The Lesotho waste management guidelines recommend proper disposal of sharps in yellow puncture resistant containers (MOH Lesotho, 2012:63).

2.3.2.5 Disinfection of potentially infectious equipment and surfaces.

Disinfection of equipment is the use of physical process or chemical agents to destroy infectious pathogens (except bacterial spores) to reduce microbial load. Sterilization is the process of destroying all microorganisms including spores and viruses, using moist heat such as steam under pressure. Patient care equipment should be handled with care for cleaning and disinfections to prevent the transmission of infectious agents to healthcare workers (Massinga, 2012:23-24).

The WHO recommends the cleaning equipment and surfaces with water and soap to remove debris and organic matter, then disinfection with chemical disinfectants may follow to kill micro-organisms (WHO Interim Guidelines, 2020:2). The same recommendations are applied in sub-Saharan Africa as reiterated in a study conducted in the Republic of South Africa (RSA) (Massinga, 2012:23-24). However, no literature was found on disinfection practices or guidelines regarding the equipment and surfaces in Lesotho.

2.3.2.6 Waste disposal

Healthcare waste is generated through activities necessary for healthcare service provision to clients. It is classified into two main categories, namely, healthcare general waste and healthcare risk waste (Ministry of Health Lesotho, 2012:2).

Healthcare general waste: is the non-hazardous waste, same as general household or domestic waste including paper, packaging, food left-overs and flowers.

Healthcare risk waste: is the hazardous waste that poses immediate risk to human health and the environment and it is further classified into six categories, namely,

Infectious waste; contains materials suspected to be contaminated with pathogens, that is everything that came in contact with the patient's blood or body fluids

Sharps; needles, blades, broken/clinical glass, blood vails, ampules and laboratory sharps waste

Pathologic waste; human tissues and organs such as placentas, amputations and discarded laboratory waste.(Ministry of Health Lesotho, 2012:2-4).

In Lesotho, healthcare waste is segregated using colour codes for management as recommended internationally. Black plastics for discarding healthcare general waste, red plastics for infectious waste and red containers for pathologic waste, yellow puncture resistant containers for sharps and green containers for pharmaceutical waste (Ministry of Health Lesotho, 2012:63).

2.4 COMPLIANCE WITH STANDARD PRECAUTIONS

Compliance with standard precautions means accurate implementation of standard precautions; that is adequate handwashing, correct use of protective attire, and proper handling of equipment and waste among healthcare workers (Luo, He, Zhou, & Luo, 2010:1108). Powers, Armellino, Dolansky, and Fitzpatrick, (2016:4) attest that a lot of self-reported studies identified general suboptimal compliance to standard precautions in the health sector. Although there is general minimal compliance to implementation of standard precautions worldwide, it is reported to be even poorer in developing countries (Akagbo, Nortey, & Ackumey, 2017:6).

In addition to that, a systematic review of studies conducted in Asia, Europe, North America and Australia, by Moralejo, El Dib, Prata, Barretti and Correa., (2018:8) also reported a general suboptimal adherence to standard precautions globally, with better compliance in developed countries than in developing countries. These findings were also reflected in a French audit by Giard Laprugne-garcia, Caillat-vallet, Eng, Pharmd, Eng, Vernier and Laland, (2016:13), which identified that although still suboptimal, there was a high level of implementation of standard precautions in France, a developed country. On the other hand a study by Rothe, Schlaich and Thompson (2013:260) reported poorer compliance to standard precautions in sub-Saharan Africa and developing countries.

Many studies explored compliance to individual standard precautions elements in association with healthcare departments and occupational groups (Giard et al., 2016; Pandit & Kulkarni, 2016; Punia Nair & Shetty., 2014). These studies consistently found poorer compliance with standard precautions in lower income, developing countries than in developed countries. No studies could be found within the Lesotho primary healthcare context in this regard.

2.4.1 Compliance with Hand hygiene standard precautions:

Several studies relayed a high level of adherence to hand hygiene, internationally or locally. Although compliance differs with the occupational groups, these studies report that nurses are typically the most compliant group (Giard et al., 2016:11; Punia et al., 2014:2; Rothe et al., 2013:261; Wasswa Nalwadda, Buregyeya, Sheba, Gitta, Anguzu & Nuwaha, 2015:6). A French audit by Giard et al., (2016: 11) reported compliance of over 80% among the nursing groups and 71% among physicians. Punia et al., (2014:2) also reported a higher compliance by nurses than other cadres. Uniformly, a study among the nurses in Uganda also identified higher compliance to hand hygiene than reported in other studies that they reviewed (Wasswa et al., 2015:6).

However, studies in sub Saharan Africa have shown poor compliance to hand hygiene, with physicians slightly more compliant than nurses (Rothe et al., 2013: 261). A study in primary healthcare in Brazil reported even lower compliance to hand hygiene in primary health settings with the ranges from 8% to 53.3% (Maroldi et al., 2017:5).

2.4.2 Protective attire:

I. Gloves:

Gloves are the most adhered to protective attire (Wasswa et al., 2015:2). Pandit and Kulkarni (2016: 333), found no significant difference in adherence to the use of gloves among occupational groups but the adherence differed with the healthcare department, with higher percentage of up to 100% in medical wards and over 70% in surgical wards. Equivalently (Punia et al., 2014:2), reported compliance of over 80% to the use of gloves in emergency and trauma departments.

II. Gowns, masks and eyewear

The use of other protective attire is relatively lower than that of gloves among all occupational groups and departments, as Pandit and Kulkarni (2016:333) found less than 50% compliance among both physicians and nursing cadres, in both medical and surgical wards. Likewise, Punia et al., (2014: 2) pinpointed a low adherence ranging to a little over 50%. Studies among healthcare workers in Uganda and South Africa in general also share the same observation of lower compliance to protective clothing (Wasswa et al., 2015: 2),. Student nurses in Saudi Arabia were found to be more compliant to protective attire at 72.9% (Colet et al., 2017: 424). However no literature was found in Lesotho on compliance to the use of PPE.

2.4.3 Needle safety:

A lot of studies have reported a high percentage of non-compliance to needle safety practices, with unsafe therapeutic injection practices and needle recapping common among all cadres of healthcare workers (Gadzama et al., 2014: 137). An audit in France identified a lot of international studies which attested to a high percentage of needle recapping among healthcare workers, especially physicians in comparison to nurses (Giard et al., 2016: 11). These findings are similar to those of a study by Wasswa et al., (2015: 6) who also identified a lot of needle recapping among healthcare workers in Uganda. Therefore needle safety is one of the most non-adhered to standard precautionary measure worldwide, with needle recapping as the most common practice. However, there is no literature about compliance to needle safety practices in primary healthcare sector in Lesotho.

2.4.4 Disinfection of potentially infectious equipment or surfaces:

Scarce literature was found on cleaning and disinfecting equipment and surfaces outside of the operating room. A study in South Africa about compliance with universal precautions in operating theatres, showed good adherence to cleaning and disinfection of equipment and surfaces (Massinga, 2012: 64-66). On the other hand a study in Nigeria reported non-compliance to disinfecting instruments before use, sterilizing surfaces when required and re-use of disposable items at 14.3%, 39.7% and 5.7% respectively, among all healthcare workers.

2.4.5 Waste disposal:

Colet et al. (2017: 425-427) identified improper general and medical waste disposal among nursing students in Saudi. Although they were reported to be similar to those found in other studies that they conducted, they found that sharps disposal was highly adhered to at 84.3%. Waste disposal depends on the availability and closeness of suitable containers. A study in Nigeria reported that suitable containers were reported to be out of reach leading to improper waste disposal (Gadzama et al., 2014: 137).

2.5 FACTORS INFLUENCING COMPLIANCE WITH STANDARD PRECAUTIONS.

2.5.1 Education and training

Many studies identified the need for education and training to ensure or improve compliance to standard precautions, as lack of knowledge was found to be a major causes of incompliance (Cutter & Jordan, 2012; Maroldi et al., 2017; Nugmanova et al., 2015; Orlandi & Figueiredo, 2013). Researchers noted that knowledge deficit regarding standard precautions in developing countries, resulted in poorer compliance to it. On the other hand developed countries reported adequate knowledge thus giving better results, with regard to implementation of standard precautions (Orlandi & Figueiredo, 2015: 477). Congruently, primary healthcare workers, in a study in Brazil, reported lack of knowledge about standard precautions and recognized the need for more in-service trainings (Maroldi et al., 2017:5).

Furthermore, Nugmanova et al. (2015:200) recognized the need for evidence- based recommendations in successful implementation of standard precautions. They therefore identified the need to not only educate medical students about implementation of standard precaution but to also

educate the clinicians as they were reported to be most non-adherent to standard precautions. In addition to that, training and education and the need for health promotion were identified to be essential in improving compliance to standard precautions (Cutter & Jordan, 2012: 961). In a similar manner, a study among nursing students gathered that compliance education is directly related to better implementation of standard precaution, as participants testified that their awareness and compliance improved after training (Kim & Oh, 2015: 113).

2.5.2 Management strategies

Management strategies such as development of effective infection control programmes and policies, enforcement of implementation of standard precautions and continuous monitoring by management are the most effective influencers of compliance to standard precautions (Nugmanova et al., 2015: 200). Cutter and Jordan (2012: 960) in their study in the United Kingdom found out that doctors are hardly involved in policy development or guideline setting. They turned out to be more non-compliant than nurses, who tent to participate in policy development and thus are more compliant. Therefore they recommend that all healthcare cadres be involved in policy development to enforce compliance to standard precautions.

Furthermore, Orlandi and Figueiredo, (2013:447) also observe that adoption of good practices such as leadership strategies, team monitoring and guidance on best practices increases compliance to standard precautions. Similarly, Giard et al. (2016:13), found that institutional safety climate and leadership support positive influence implementation of standard precautions. In a study by Kim and Oh (2015:111), nursing students reported that poor monitoring by nurses as their supervisors and incompliance by the nurses did not encourage them to adhere to standard precautions. In another study, the nurses reported that incompliance to standard precautions by their supervisors or doctors also influences them not to follow standard precautions principles that they are well aware of (Efstathiou et al., 2011:6). Thus, through the understanding of various studies close monitoring and guidance by management and supervisors is essential in enhancing adequate implementation of standard precautions.

A French audit by Giard et al. (2016:13) identified the development of an innovative actions programme, which included communication aids and teaching tools for healthcare workers, as a managerial strategy to re-enforce the implementation of standard precautions. They further focused on assessing progress and encouraged audits as a follow up strategy for effective monitoring and evaluation (Giard et al., 2016:13).

2.5.3 Self-efficacy

Self-efficacy is the confidence to adapt to change and new experiences (Luo et al., 2010:1109). General self-efficacy was found to positively influence compliance to standard precautions (Luo et al., 2010: 1109). Younger health care workers who were working in theatre reported better knowledge and positive attitude to implementation of standard precautions (Giard et al., 2016: 13). Another study among students attested that more clinical exposure and experience instilled more knowledge about the guidelines and protocols, hence confidence to compliance with standard precautions (Colet et al., 2017: 428).

On the other hand more experienced people are so confident in their abilities that they tend to ignore the guidelines and find it hard to adapt to the changes, as they reported discomfort with adhering to standard precautions such as wearing gloves or masks in situations that require such protective equipment (Efstathiou et al., 2011: 6).

2.5.4 Risk perception

Perceiving the risk of infection to be low or high in certain patients directly influences implementation of standard precautions (Efstathiou et al., 2011: 6-7). Healthcare workers at primary healthcare level perceived the risk of exposure to infections to be low at that level of care therefore failed to adopt the necessary standard precautions (Maroldi et al., 2017: 3). Moreover, the nurses attested that working with a child client, has a perceived low risk of infection, because of their innocent nature. Therefore, healthcare workers hardly apply standard precautions with them. On the other hand adults are perceived to be at risk of contracting infections therefore at risk of exposing the nurses to infections; thus the nurses tent to implement standard precautions with adult clients (Efstathiou et al., 2011: 6-7).

Risk perception was identified to be the most significant predictor of implementation of standard precautions. However, students sometimes experience difficulty in identifying risk of exposure because of inadequate patient information or organizational guidelines. They have difficulty deciding whether or not to implement standard precautions or not (Kim & Oh, 2015: 113).

Furthermore, the patient's nationality, way of life and sexual orientation are reported to be some of the risk factors influencing the implementation of standard precautions (Giard et al., 2016: 12). Dealing with clients from nationalities with reported high infection rates such as Africans influence healthcare workers to apply standard precaution. Homosexuals and sex workers are perceived to be high risk groups therefore Giard et al., 2016: 12 indicate the need for the implementation of standard precautions when dealing with them (Giard et al., 2016: 12). In primary healthcare clinics in Lesotho,

nurses also work with both adults and children. There are also people of different sexual orientations. Therefore the how they perceive the risk with different clients could possibly influence their implementation of standard precautions.

2.5.5 Infrastructure and resource limitations

The provision of appropriate infrastructure, PPE, environmental control and proper provision of equipment and supplies is essential for good health practice in all health settings including the primary health sector (Maroldi et al., 2017: 5). Primary healthcare workers reported that the facilities were inadequate to accommodate patients with respiratory transmitted infections and that sometimes they face limitations of material resources such as gloves, leading to poor implementation of standard precautions. (Maroldi et al., 2017: 5). Efstathiou et al., (2011:5) also identified lack of PPE and sometimes accessibility of equipment because it is placed far from where the nursing care is provided; thus the nurses end up not implementing standard precautions.

Ugandan nurses reported lack of resources, both human and material to be the main barrier to proper application of standard precautions (Nderitu, Mill, & Richter, 2015: 629-631). Shortage of staff increases the work load of nurses, thereby resulting in lack of time to comply properly with standard precautions. They reported that in their hospitals there is shortage of equipment and that sometimes they do not have gloves or resources for hand hygiene and waste disposal (Nderitu et al., 2015: 629-631).

2.5.6 Work situations

Work circumstances, such as workload or emergency situations affect compliance to standard precautions (Efstathiou et al., 2011:9). The nurses reported that emergency situations require doing a lot of things urgently therefore it gets impossible to adhere to all the required standard precautions and measures. The findings are similar to those in the study by Akagbo et al., (2017:4), in which healthcare workers stated that implementing standard precautions in emergency situations sometimes puts the patients at risk of adverse situations or death. In addition to that healthcare workers give priority to the patients' needs than their own safety during emergency cases (Holla et al., 2014:103).

Heavy workload also hinders the implementation of standard precautions. One does not have adequate time to follow the guidelines. The healthcare workers improvise to get the work done (Efstathiou et al., 2011:9). Nderitu et al. (2015:635) also found that overcrowding increases the

workload and poses a big challenge to the implementation of standard precautions. Similarly, Porto and Marziale (2016:13) also find that understaffing, workload and stressful work situations interfere with adherence to standard precautions. Primary healthcare clinics in Lesotho are staffed with at least five nursing personnel. This is 51% of the recommended healthcare personnel. According to patient> nurse ratio, this could cause a work overload ("Lesotho Public Helth Sector Expenditure Review," 2017:25).

2.5.7 Perceived barriers

Maroldi et al., (2017:6) find that the stigma associated with some diseases such as TB put healthcare workers in a difficult position to implement standard precautions such as wearing a mask. The patients may feel like the healthcare provider is discriminating against them. Therefore they end up not complying with the healthcare precautions. In a study in Ghana, the healthcare workers' opinion was that wearing PPE such as gloves, aprons and masks might instil fear in patients, thus being non-compliant towards standard precautions (Akagbo et al., 2017:4). Efstathiou et al., (2011:5) similarly suggested that the use of PPE causes client anxiety and discomfort. Nursing students also said that worrying about the patients' discomfort hinders adherence to standard precautions (Kim & Oh, 2015:111).

Discomfort with other standard precautions apparatus was also found to be a barrier to the implementation of standard precautions by Efstathiou et al., (2011:9). They reported that the nurses claim that gloves cause skin irritation or pain so healthcare workers tend not to wear them in some situations where they are necessary. The nurses also said that that PPE such as masks negatively impacts on their appearance. For example, masks and head covers destroy their makeup and hair.

The nurses also reported that gloves interfere with some of their skills such as drawing blood so they prefer not to use gloves (Efstathiou et al., 2011:9). Similarly, Abdulraheem, Amodu, Saka, Bolarinwa, and Uthman (2012:4), suggest that gloves reduce dexterity to perform some activities. The healthcare workers in a study by Akagbo et al. (2017:4) also attested to the standard precautions apparatus interference with their ability to provide care to the patients.

Following the example of non-compliant colleagues was identified by several studies to be a barrier to the implementation of standard precautionary measures (Abdulraheem et al., 2012; Efstathiou et al., 2011; Holla et al., 2014), . Some nurses attested that they follow the physicians' practices. If the physicians do not use gloves or even forbid the use of gloves or masks in the procedures that require

such PPE, they follow the examples and instructions (Efstathiou et al., 2011:6). Abdulraheem et al., (2012) and Holla et al., (2014) also found that healthcare workers tend to follow their colleagues in the implementation of standard precautions instead of doing what they know is right. In addition, nursing students also reported that they find it difficult to follow standard precautions recommendations when the nurses in the workplace do not follow them (Kim & Oh, 2015:111).

2.6 SUMMARY

A literature review was done to establish a better understanding of standard precautions and to establish the background for conducting the study and interpreting the finding. How standard precautions came about, standard precautionary measures and their recommendations were explored. Compliance to the standard precautions by healthcare cadres and different departments were also discussed. Moreover, the factors that either negatively or positively influence the implementation of standard precautions in the health sector were also reviewed. The literature presented in Chapter two will be elaborated upon in the discussion of the study findings in chapter five. The following chapter will depict the research methodology applied in the study.

2.7 CONCLUSION

The elements of standard precautions were developed gradually as the healthcare systems changed. Based on various studies, there are clear guidelines concerning how and when standard precautionary measures should be implemented. However, there is suboptimal compliance to standard precautions, differing among the healthcare cadres and within the healthcare departments. Factors such as education and training, management strategies, self-efficacy, risk perception, infrastructure, work situations and perceived barriers were identified to influence the implementation of standard precautions either positively or negatively.

CHAPTER 3
RESEARCH METHODOLOGY

3.1 INTRODUCTION

Chapter one presented the purpose and objectives of the study while Chapter two explored the literature related to the background and implementation of standard precautions. Chapter three presents the research methodology that was followed to reach the study objectives. To explore the perceptions of the nurses about the implementation of standard precautions, a qualitative descriptive research methodology was followed in this study.

3.2 AIM AND OBJECTIVES

The aim of the study was to identify the perceptions of the nurses on their implementation of standard precautions at the primary healthcare clinics in Leribe district, Lesotho.

The objectives of this study were:

i. To explore the nurses' understanding of standard precautions in daily clinical practice.
ii. To describe the nurses' current practices with regard to the implementation of standard precautions in daily clinical practice.
iii. To explain the barriers identified by the nurses towards their implementation of standard precautions in daily clinical practice.

3.3 STUDY SETTING

Lesotho is a small landlocked country surrounded by South Africa and is sometimes called the Kingdom of Lesotho. It has an estimated population of 2.13 million scattered in its ten districts (World review population, 2019).

Congruent with the qualitative methodology, this study took place in a real life setting, in the Leribe district. Leribe is the second largest district in Lesotho in terms of population, with approximately 14.8% of the population. It is one of the northern regions bordering the Free State Province of South Africa in the west (Lesotho-Info n.d.). Lesotho is reported to have a high prevalence of HIV and TB. Leribe ranks among the hardest hit districts with the prevalence of 23.7% (Lesotho Population-Based HIV Impact Assessment, 2017:2). The healthcare system is such that there is one referral hospital,

three specialized hospitals, 18 district hospitals, three filter clinics and 188 health centers/clinics distributed across the ten districts of the country (National Health Strategic Plan 2017-2022), 2016:9). About 15% of the health facilities are in the Leribe district, and approximately 85% of them are primary health facilities. All of them are equally expected to implement the standard precautions efficiently (National Health Strategic Plan 2017-2022, 2016:9).

The study was conducted at four primary care clinics in the Leribe district in Lesotho. Four clinics were selected as the subset of the whole population of clinics following the study design. The selection was based on availability of all three nursing cadres in each clinic, presenting a nurses of various ages and different years of experience. These clinics also provide all primary healthcare services including maternity services. The selected clinics are twenty to thirty kilometers from the nearest hospital, with a catchment population at each clinic ranging from 10000 to 25000 people (Leribe district catchment populations 2014-2017). The staffing pattern at each clinic is at least three registered nurse midwifes, a nurse clinician and two nursing assistants ("Lesotho Public Helth Sector Expenditure Review," 2017). The selection of clinics was based on the staffing pattern and work experience of nurses. All these clinics are equally expected to implement national policies/ directives or guidelines. There is a mixture of older more experienced nurses and young nurses which will help to gather a wide range of perceptions on the study topic.

3.4 RESEARCH DESIGN

A research design is a plan or model for conducting a study. It optimizes control of the factors that may interfere with the desired outcomes of the study (Burns & Grove, 2011:45). It is developed to meet unique research needs as they emerge, It is a variety of qualitative and quantitative approach, directing the population selection, the sampling procedure, the measurement methods, data collection and the analysis plans (Creswell, 2014:31).

To reach the objectives of this study, a qualitative approach, using an exploratory descriptive design, was used. This approach is used to explore, describe and understand the meaning that individuals or groups give to human or social problems (Creswell, 2014:32). In this approach data is collected by talking with or observing people, allowing them to express a full range of beliefs, feelings and behaviours. Data is analysed to give a rich description or theory of the phenomenon (Pilot & Beck, 2010:79). The choice of a study approach and design depends on the knowledge gap in the topic of interest, the purpose of the study and the intent to generalize the findings (Burns & Grove, 2011:45).

A qualitative approach suited this study, because there is limited literature on the implementation of standard precautions in the primary healthcare sector, specifically within Lesotho. The poor reporting

and scarce literature regarding occupational exposure to infections was reiterated by an epidemiology study in sub-Saharan Africa (Beyera & Beyen, 2014:3-4). The researcher wanted to interact with the participants in their real natural environment so as to deeply understand the phenomenon under study in its natural environment (Pilot & Beck, 2017:10). Qualitative research approach also allowed the researcher to act as the main instrument for data collection because she was interacting with the participants during the interviews (Brink, van der Walt, & Rensburg, 2012:121). In quantitative research approach, the researcher needs to send data collection tools to the participants for participants to complete and quantifiable data is collected. This study focused on subjective and non-quantifiable data and the qualitative approach allowed for collection of such data from the participants (Pilot & Beck, 2017:10).

Qualitative research approach also allowed the researcher to utilise small and information rich sample as 12 individuals participated in this study. Large representative samples are only needed when utilising quantitative research approach and this was not the direction the researcher followed (Pilot & Beck, 2017:10). Gray, Groove & Sutherland (2017:26), explain that data analysis in qualitative research approach is text-based while in quantitative research approach statistical analysis is performed. In this study, the researcher focused on text-based analysis where different themes and sub-themes emerged. According to Gray et al., (2017:268), qualitative research approach allows the researcher to collect and analyse data simultaneously. This enabled the researcher to observe early when she reached data saturation and this is the point where information from the participants became repetitive (Gray et al., 2017:352).

The exploratory descriptive design in qualitative approach was used in this study and it allowed the researcher to explore and describe the perceptions of the nurses at primary care clinics on how they implement standard precautions. This was done to acquire in-depth understanding of implementation of standard precautions in a primary care setting.

3.5 POPULATION AND SAMPLING

A study population is the entire aggregation of cases in which the researcher is interested (Pilot & Beck, 2017:365). For this study, study population was all the nursing personnel at the clinics. These were the nurse clinicians, registered nurse midwifes and nursing assistants. They were equally exposed to occupational infections and were all expected to implement the standard precautions. Each clinic has between five to seven nursing personnel.

Sampling is the process of selecting the cases to represent the entire population, to permit extrapolations about the population (Pilot & Beck, 2017:367). Qualitative studies aim to discover a

deep meaning and multiple realities. Therefore it uses small non-random samples guided by data saturation (Pilot & Beck, 2017:367). Purposive sampling was used to invite the participants with experience in implementing standard precautions, to participate in this study. This is a non-probability sampling method where researchers use their own judgement to select information-rich cases to gather in-depth information on the topic of study (Burns & Grove, 2011:270). The researcher purposely selected clinics with all three nursing cadres, about half of the clinics have all three nursing cadres while the other half has only registered nurse midwives and nursing assistants. Selected clinics had nurses of various ages and years of experience. The nurses' in-charge of the clinics were visited at their respective clinics, told about the study and asked for permission to conduct the study at their clinics. Three nurses, one of each of the different cadres were selected from each of the four selected clinics. These participants could describe various perceptions on the implementation of standard precautions by different nursing cadres employed in different primary healthcare clinics. In each clinic, the participants of various ages and years of experience from each of the three nursing cadres were, approached individually and invited to participate in the study. All the invited participants agreed to take part in the study.

Typically, in qualitative descriptive studies the sample size is small to allow deep case-oriented analyses which are, however, large enough to unfold a new, and rich understanding, depending on data saturation (Vasileiou, Barnett, Thorpe, & Young, 2018:2). The number of participants differs with the size of the study but data saturation with individual interviews can be reached between 9 and 24 participants (Vasileiou et al., 2018:3). For the purpose of this study twelve participants were included in the sample.

Table 3.1. Description of study participants

Clinics	Participants	Nursing cadre	Years of experience	Pseudonym
Clinic 1	3 Participants	Nurse Clinician x 1 Registered Nurse midwife x 1 Nursing Assistant x 1	30 years 3 years 8 years	NC 1 RN 1 NA 1
Clinic 2	3 Participants	Nurse Clinician x 1 Registered Nurse midwife x	34 years 11years	NC 2 RN 2

		1 Nursing Assistant x 1	32 years	NA 2
Clinic 3	3 Participants	Nurse Clinician x 1 Registered Nurse midwife x 1 Nursing Assistant x 1	17 years 6 years 23 years	NC 3 RN 3 NA 3
Clinic 4	3 Participants	Nurse Clinician x 1 Registered Nurse midwife x 1 Nursing Assistant x 1	16 years 1 year 5 years	NC 4 RN 4 NA 4

3.5.1 Inclusion criteria

Inclusion criteria is the basis for defining the population being studied, that is who is eligible to participate in the study (Pilot & Beck, 2017:366). In Lesotho, nurses are registered as nurse clinicians, registered nurse midwives and nursing assistants (Nurses and Midwives Act, 1998: 107) and referred to as different categories or “cadres” of nurses.

The inclusion criteria for this study were:

i. Nurse clinicians
ii. Registered nurse midwives
iii. Nursing assistants

In this study, all three nursing cadres (categories) were included as they equally apply the principles of standard precautions when rendering patient care.

3.5.2 Exclusion criteria

Exclusion criteria is the basis for excluding the subjects that meet the inclusion criteria for other reasons (Grove et al., 2013:357). This study had no exclusion criteria.

3.6 DATA COLLECTION INSTRUMENT

Individual interviews were conducted to collect data, using a semi-structured interview guide developed by the researcher (Appendix 1). The interview questions developed were based on the objectives of the study as suggested by Bolderston & Mrt, (2012:70) to ensure that the study participants answer the research question. Interviews are one-on-one interactions between the researcher and individual participants, used to obtain authentic information about personal feelings, opinions and perceptions (Dikko, 2016:523). This data collection method was selected to assist the researcher to obtain an in-depth understanding of the perceptions of the nurses on the implementation of standard precautions

The interview guide had two sections. The first section was the biographic demographic information of the participation. It included the nursing cadre and their years of experience, to explore whether different cadres, ages and years of experience did things differently.

Section two included three interview questions based on the objectives of the study. Question one was about the participants' understanding of standard of standard precautions, as it relates to the first study objective. Participants were probed about their understanding of standard precautions, how and when they should be applied. Question two focused on the participants' implementation of standard precautions. The purpose of the question was to explore the individuals' practices of standard precautions. The participants were asked the circumstances under which they implement each standard precautionary measure. Question three aimed to elicit discussions about the barriers to implementation of standard precautions. The barriers to the implementation of standard precautions and any factors that contribute to the implementation are discussed. The participants were asked to elaborate on the hindrances to the implementation of standard precautions in their workplace. The interview guide was reviewed by the study supervisor to ensure trustworthiness

3.7 PILOT INTERVIEW

A pilot interview determines the adequacy and necessity of interview questions and responses as well as whether all the required information will be gathered. It further assesses the length of time required to conduct each interview (Dikko, 2016:522). The researcher selected one participant who met the inclusion criteria, from one of the clinics, and conducted a pilot interview to assess the adequacy of the research interview questions and responses. The interview lasted for thirty minutes. The findings showed that some of the objectives of the study, such as individual compliance to standard precautions were not addressed. The responses helped the researcher develop more probing questions on the final interview guide. The findings from the pilot interview were included in the results

of the study, as Pilot and Beck, (2017:895) noted an ethical obligation to report the pilot study results for any type of research. The data collected during this pilot interview contained valuable information in relation to the study objectives.

3.8 TRUSTWORTHINESS

Trustworthiness is the determination of the rigor of a qualitative research to ensure that it is of a high quality through evaluating the credibility, transferability, dependability and confirmability of the study (Burns & Groove, 2015: 392). In this study, the criteria of trustworthiness from Lincoln & Guba (1985) was applied.

3.8.1 Credibility

Credibility is the criteria for evaluating internal validity of the study or confidence in the truthfulness of the findings. Whether the findings of the study actually reflect the phenomena being studied depends on the participants. Therefore the participants need to feel that the findings are accurate and credible (Hammarberg et al., 2016: 500). Shenton (2004:67) states that to ensure credibility, the use of interactive questioning and probes elicit detailed data and ensures that the gathered information reflects the true feelings of the participants. This was done through the use of probing questions during the interviews to extract adequate information on how the participants really felt. The researcher also restated and summarised the information and then requested the participants to determine the accuracy of the findings

Member checking is also encouraged to ensure credibility of the findings (Shenton, 2004:68). The participants were revisited with transcripts of their interview to verify whether their responses matched what they intended them to mean. Verbatim quoting of participants' transcriptions was also done during data analysis, as encouraged by Hammarberg, Kirkman & De Lacey, (2016:500) to illustrate and support the interpretation.

3.8.2 Transferability

Transferability shows that the findings have applicability in other contexts and can be generalised to similar settings, situations and populations. (Efstathiou et al., 2011:4). To enhance transferability Shenton, (2004:69-71) suggests the use of thick, rich descriptions of the phenomena being studied, the study setting, the participants and data collection in order to allow the reader to determine how far they are confident to generalize the conclusions of the study to other settings, although qualitative

studies cannot always be generalized. The study setting and data collection were described thoroughly.

Merriam and Tisdell, (2016:257) also emphasise the importance of the sampling technique used and encourages maximum variation sample to gather a variety of attributes and to allow greater applicability by the readers. The sampling technique was purposive sampling in order to select the nurses of various cadres, different ages and years of experience.

3.8.3 Dependability

Dependability is showing consistency and reliability of the findings. It means that given the same data, other researchers will find similar patterns. . (Hammarberg, Kirkman, & De Lacey, 2016: 500). To enhance the dependability of this study, a detailed research methodology with all the steps and activities of the study were documented. All the conducted interviews followed the same interview guide. Lincoln and Guba (1985:316-317) suggested the use of inquiry audit to examine and review the data collection and analysis process. The research methodology and the data collection instrument were also verified by the study supervisor. Furthermore, the raw and analysed transcriptions and findings were reviewed by the supervisor.

3.8.4 Confirmability

Confirmability is the degree of neutrality, that the findings are not influenced by the researcher's bias, motivation or interest (Hammarberg et al., 2016: 500). Confirmability was ensured by noting and bracketing preconceived ideas to reduce bias through the use of a reflexive journal that noted preconceived ideas of the researcher about the research topic and why she decided to conduct the research. Newman (2010:86) suggests engaging in an interview with an outside source to acknowledge preconceptions and bias. The findings were audited by the study supervisor to eliminate bias (Lincoln & Guba, 1985:319).

3.9 ETHICAL CONSIDERATIONS

The declaration of Helsinki is about ensuring that the researcher protects the life, privacy, health and dignity of participants. It also emphasizes the importance of risk-benefit analysis so that the study may not be conducted if the risks outweigh the benefits (World Medical Association, 2008). To ensure that there is minimum risk to the study participants, two ethics research committees were consulted and they approved the study. Ethical approval by Stellenbosch University Research Ethics committee was obtained on 10 May 2019. Ethical approval by the Ministry of Health Lesotho, Health Research Committee was obtained on 12 June 2019.

The Nuremberg Code emphasises the importance of informed consent, ensuring that the study will be beneficial to the society, minimizing the risks to human subjects and engaging the use of skilled personnel to conduct the study (U.S. Department of Health and Human Services, Office of Human Research Protection (OHRP) 2013).

The district health management team's permission to conduct the study was obtained. Nurses-in-charge of the clinics were asked for permission to conduct the study at their respective facilities and the following ethical principles were observed with all the participants:

The ethical principle of autonomy: emphasizes respect of each individual human being and making them aware that they have basic rights such as the right to know, the right to healthcare and the right to make their own choices. This is why the participants need to give their informed consent and be aware of their right to agree or to decline to take part in the study (Pera & Van Tonder, 2011:70-72). Potential participants were approached individually, told about the study and asked for their consent to participate in the study voluntarily. Those who agreed to participate were given consent forms to sign and asked for a suitable date and time for the interview. The right of each individual to agree or to refuse to take part in the study or to withdraw their participation at any time during the study was expressed.

Beneficence/Non-maleficence are about expressing kindness and avoiding doing any physical, psychological, spiritual or emotional harm to the study participants. Research looks at minimization of risks and maximization of benefits of the study. (Pera & Van Tonder, 2011:55). The researcher is a nurse from one of the clinics that was not selected for this study. Privacy and anonymity to participate in the study was ensured by asking the participants to choose a quiet place, free from interruption, for their comfort to express themselves without any fear or interruptions. Participants were also assured that the interviews would remain confidential. No names would appear in the reports and the audio recorder and field notes were kept in a safe place where they could only be accessed by the research team after the interviews.

The principle of justice: This is the fair allocation and distribution of resources, sharing the burden of risks and benefits fairly among the participants without any discrimination (Pera & Van Tonder, 2011: 57-58). Each participant was given the opportunity to choose the place and time of the interview to equally accommodate them. Each participant was given the same refreshments during the interviews. None of the participants needed transport re-imbursement as only the researcher travelled to places scheduled for interviews.

3.10 DATA COLLECTION

Data collection in qualitative research is more unpredictable than in other approaches and it is determined by the theoretical orientation the purpose of the study and the sample selected (Merriam & Tisdell, 2016:106). Qualitative data collection methods are interviews with participants, observation and examination or records and documents (Merriam & Tisdell, 2016:106).

In this study, data was collected at four primary healthcare clinics in Leribe district, Lesotho by the researcher between July and August 2019. All the necessary ethical considerations were observed during data collection and data analysis (appendix 4). The clinics were visited by the researcher and potential participants were approached individually to ensure privacy and confidentiality. Details of the study were discussed and voluntary participation was emphasised. Those nurses that agreed to participate were given consent forms and arrangements for a suitable date and time for the interview were made.

The interviews were conducted by the researcher using a semi-structured interview guide that she developed and recorded on an audio device. Interviews lasted between twenty and thirty minutes each. The researcher welcomed the participants and introduced herself and the aim and purpose of the study, then asked the participants for permission to record the interviews on an audio device for proper record keeping and data analysis

Privacy and anonymity to participate in the study was ensured by asking the participants to choose a quiet place, free from interruption, for their comfort to express themselves without any fear or interruptions. All the participants chose to have interviews at their respective work places but chose a quiet room without any interruptions. The right of each individual to agree or refuse to take part in the study or refrain from participating at any time during the study was expressed. Participants were also assured that the interviews would remain confidential as no names would appear in the reports. The audio recordings and field notes were kept in a safe place where they can only be accessed by the research team after the interviews. Each participant was given the opportunity to choose the place and time of the interview to equally accommodate them. Each participant was given the same kind of refreshments during the interviews. None of the participants needed transport re-imbursement as only the researcher travelled to places scheduled for interviews. Participants were revisited with transcripts of their interview during the data analysis stage to verify that their words match what they intended them to mean.

3.11 DATA ANALYSIS

Data analysis in qualitative research is done in conjunction with data collection, as the participants express their views and experiences, the researcher is already trying to understand the phenomena being studied (Burns & Grove, 2011:88). Creswell's approach to data analysis was used. The approach has six steps. (Creswell, 2014:247-250).

3.11.1 Organize and prepare data for analysis

The first step of data analysis is transcribing the interview recordings, sorting out and arranging all the available data from transcribed audios and field notes (Creswell, 2014:247-250). The researcher arranged the data by compiling all the interview audios and emailing them for transcription. A trained person, who signed a confidentiality agreement (Appendix 5), was hired to transcribe all audio recordings from the interviews with the participants.

3.11.2 Read though all data

The reading and re-reading of data is done to get general sense of information and overall meaning of collected data during the second step of data analysis (Creswell, 2014:247-250). The researcher read through each transcribed audio to try to make sense of the acquired information, noting the key points in the participants' answers.

3.11.3 Coding data

The third step of data analysis is to organize the data into small chunks of information and assign them categories called codes (Creswell, 2014:247-250). Initially in-vivo coding was done where all the key points in transcribed audio documents were outlined by colouring outstanding phrases of exact words of the participants as codes. Then axial coding was done where the data was reassembled in the form of a table, with the first column showing the key points identified with in vivo coding and the second column codes assigned to the key words (Theron et al., 2010:5).

3.11.4 Using codes to describe the setting or people and develop categories or themes for analysis

Creswell (2014:247-250) described the fourth step of data analysis as a detailed description of the setting or the people involved. The themes and categories derived from coding are identified for better analyses of data. During data analysis the researcher took the table of codes and added another column to develop the themes from the common codes.

3.11.5 Presenting the results of the analysis

A narrative passage is written to convey the findings of the analysis. It may be a series of events, detailed discussions of themes or interrelated themes (Creswell, 2014:247-250). The derived themes and sub-themes were discussed in a narrative passage with verbatim quotes of participants to support the discussion. The theme safety guidelines were developed from the common codes, supported by knowledge and reinforcement of standard precautions as the participants described the concepts and displayed knowledge of standard precautions relating them to reinforcement thereof. Participants further described their practices of standard precautions, stating their compliance and risk perception as the main indicator for their practice of standard precautions, thus developing the second theme and sub-themes. Furthermore, several factors were identified as the barriers to adequate implementation of standard precautions, thus developing the third theme, barriers to the implementation of standard precautions. Infrastructure limitations, procurement issues, work situations, cultural issues and physical discomfort were the common barriers identified, thus providing the subthemes of barriers to the implementation of standard precautions.

3.11.6 Interpretation of the results of the analysis:

The researcher examined whether the research question had been answered and what lessons were learned from the data (Creswell, 2014:247-250). The research question was revisited and the findings interpreted to see whether the research question had been answered.

3.12 SUMMARY

Research methodology lays out a plan for recruiting the participants as well as collecting and analysing the data. The aims and objectives of the study were described in order to assist with the choice of the research design required for this study. An exploratory descriptive qualitative design was followed. Participants were selected through heterogeneous purposive sampling methods while data was collected through one-on-one interviews using a semi-structured interview guide. Data analysed with Creswell's method of qualitative data analysis. The next chapter reports the findings and results of the study.

3.13 CONCLUSION

An exploratory qualitative design was used to explore the perceptions of the nurses on the implementation of standard precautions. The nurses from different cadres in four primary healthcare

clinics in Leribe district Lesotho were interviewed to explore their perceptions about the application of standard precautions.

CHAPTER 4

THE FINDINGS

4.1 INTRODUCTION

Chapter four presents the findings of this qualitative descriptive study. The study was aimed at exploring the perceptions of primary healthcare clinic nurses on the implementation of standard precautions, in the Leribe district of Lesotho.

The nurses from different categories, ages and years of experience in primary healthcare, were interviewed to determine their understanding of standard precautions, practices of standard precautions and factors that influence their decision to implement or omit standard precautions. This was done in order to acquire an in-depth understanding of their perceptions on the implementation of standard precautions.

Throughout the interviews, the participants reiterated knowledge of standard precautions as the guidelines for safety in the healthcare sector, risk perception as the indicator for their compliance to standard precautions components and several barriers to implementation of the standard precautions. Throughout the interviews, the participants struggled to express their compliance to standard precautions. They specifically struggled to specify their practices regarding needle safety, vaguely describing how they do not consistently practice those standard precautions. Furthermore, participants had different opinions regarding the practices of other standard precautions components such as disinfection of surfaces and equipment. There was a disagreement on lack of knowledge hindering implementation of standard precautions as some participants considered healthcare workers knowledgeable but negligent to comply with the standard precautions.

The themes that emerged throughout the study reflect the participants' knowledge of standard precautions as the safety guidelines and the practices and barriers to the implementation of standard precautions. The themes are elaborated on in Section B after the discussion of the biographical information in Section A.

4.2 SECTION A: BIOGRAPHIC INFORMATION

Biographic information provides a brief overview of the characteristics of the participants in this study. Interviews were conducted with twelve nurses who met the inclusion criteria of the study and who were selected from the clinics in Leribe district, Lesotho.

Of the twelve participants four were nurse clinicians, four were registered nurse midwives and four were nursing assistants. Their ages ranged between 27 and 59 years and the years of experience in nursing in general ranged between one and 34 years, as depicted in Table 4.1

TABLE 4.1: BIOGRAPHICAL DATA OF THE PARTICIPANTS

Participant	Cadre	Years of experience
NA1	Nursing assistant	8 years
NA2	Nursing assistant	32 years
NA3	Nursing assistant	23 years
NA4	Nursing assistant	5 years
NC1	Nurse Clinician	30 years
NC2	Nurse clinician	34years
NC3	Nurse Clinician	17 years
NC4	Nurse Clinician	16 years
RN1	Registered nurse midwife	3 years
RN2	Registered nurse midwife	11 years
RN3	Registered nurse midwife	6 years
RN4	Registered nurse midwife	1 year

4.3 SECTION B: THEMES EMERGING FROM THE INTERVIEWS

Throughout the interviews, the participants described their knowledge of standard precautions by identifying it as safety guidelines. However, the participants experienced that the enforcement thereof was generally poor.

Participants described standard precautions as guidelines for safety in the healthcare sector and elaborated on all the components of standard precautions available in primary healthcare. They displayed knowledge of standard precautions, focusing their discussions mainly on hand hygiene,

proper use of PPE, needle safety, disinfection of surfaces, respiratory hygiene and cough etiquette as well as waste disposal. They emphasized the importance of knowledge in the implementation of standard precautions. They further argued that enforcement of standard precautions is inadequate, and they experienced a lack of training and supportive supervision. The first theme; *safety guidelines,* was identified and supported by knowledge and enforcement of standard precautions.

In exploring the nurses' individual practices of standard precautions, all the participants described how they practice each element of standard precautions and whether they adhere to it as required. Participants reported compliance to standard precautions related to how individual nurses perceive the risk associated with certain tasks. Participants reported to be compliant to some standard precautions components even though their decision to comply is based on the perceived risk of the procedure to be performed. The second theme, *practices of standard precautions* was identified and supported by compliance with standard precautions and risk perception.

The third theme, *barriers to the implementation of standard precautions,* developed as participants emphasized that certain factors hinder adequate practice of standard precautions in the health sector. Participants identified the following barriers: infrastructure limitations, procurement, cultural issues, physical discomfort and work situations.

From the analysis of the discussions, themes and sub-themes were identified and grouped. They are presented in Table 4.2 and are elaborated upon. Verbatim quotes from the transcripts are used to support the description of the themes.

Table 4.2 Themes and sub-themes

Theme	**Sub- theme**
1. Safety Guidelines	Knowledge of standard precautions
	Enforcement of safety guidelines
2. Practices of standard precautions	Compliance with standard precautions
	Risk perception
3. Barriers to implementation of standard precautions	Infrastructure limitations
	Procurement issues

	Work situations
	Cultural issues
	Physical Discomfort

4.3.1 Theme 1: Safety Guidelines

The participants were asked about their understanding of standard precautions; that is what they are, what they are used for and what they entail. All the participants described standard precautions as safety guidelines developed to ensure the safety for both healthcare workers and patients. *NA 1 explained:*

> *"Standard safety precautions, I believe that they are some sort of guidelines or ways that have been put together in order to make err, our work environment easier and ways to make us feel safe and our patients safe while we administer whatever services that we give them"*

Although participants demonstrate knowledge of the standard precautionary measures, the enforcement thereof seems to be poor as the nursing cadres report inadequate training, unavailability of guidelines and signage as well as supportive supervision on the implementation of standard precautions.

4.3.1.1 Sub-theme 1: Knowledge of standard precautions

Participants displayed knowledge of what standard precautions are. They all described these as the guidelines developed to protect the safety of both the healthcare workers and clients in the health sector. They further listed and described all the standard precautionary measures, how they are done and when each element is prescribed.

Hand hygiene: All the cadres displayed knowledge of how and when hand hygiene should be performed. They mentioned that hand hygiene is done with water and soap or hand sanitizer and that it should be done in between patients, before and after every procedure. *RN 2 said:*

> *Hand hygiene should be done, that is after every patient. Between every procedure, I should wash my hands; before the procedure and after the procedure I should wash my hands. That is even between the patients."*

Personal protective equipment: All the nursing cadres understood the correct use of PPE. They listed all the PPE used in their health facilities namely, gloves, aprons/gowns, googles, masks and gumboots that should be worn when there is anticipated risk of contact with blood or body fluids. Each PPE item is used when there is anticipated risk of contact with body fluids with different parts of the body, in different areas of care. "*NC1 explained:*

> *By protective clothing I mean the wearing of gloves in a correct manner, wearing of aprons, using masks if you're dealing with err somebody who has got a cough and also wearing goggles to avoid splashes of contaminated fluids like liqua or anything or blood and also wearing boots."*

Respiratory hygiene and cough etiquette: All nursing cadres described cough etiquette in the same way. They portrayed respiratory hygiene and cough etiquette as ventilation through opening of windows and doors to let air flow adequately. Other measures included the use of respiratory mask while consulting patients, triage of patients for cough and education and practice of proper coughing technique, which is to cover mouth and nose with cloths or tissue paper. *RN3's explanation was:*

"Normally every morning err windows are opened, then as a staff member the procedure is all the staff members should wear N95 mask during the day, during err contact with the patients. That is what I do. And then we triage all the patients in the morning so that all those with cough can be seen first and then go home and they're given the umm the smaller mask, it's not N95, yes they're given that mask to protect them while they're still getting helped."

Disinfection of equipment and surfaces: participants differed in how they described their knowledge on the disinfection of equipment and surfaces. Some participants reported using soap, water and a sodium hypochlorite solution to clean surfaces; while others use alcohol swabs.

Whilst most participants described that they use water with soap and hypochlorite to disinfect surfaces, participants disagreed on the way they decontaminate equipment prior to disinfecting it. To disinfect equipment, some of them use hypochlorite solution while others use glutaraldehyde solution. Decontamination of equipment before disinfection also differed among the participants. While some rinse off debris with water and soap, others do it only with water. The difference in knowledge was between all the three nursing cadres, the nursing assistants, nurse clinicians and registered nurse midwifes. Most nursing assistants reported the use of hypochlorite solution to disinfect equipment and surfaces while nurse clinicians mentioned soaking equipment in glutaraldehyde after cleaning it with water and soap. Registered nurse midwifes, on the other hand, had different ideas such as either

washing equipment with water and soap before sterilizing it soaking equipment in hypochlorite before sterilizing, others discussed washing equipment with hypochlorite before soaking it in glutaraldehyde.

Needle safety: All the participants defined needle safety as the proper use and disposal of needles and sharps. They reported that needles should not be reused and recapped after use but should be discarded in the proper sharps container immediately after use. *NA1 explained:*

> *"We should not use disposable needles more than once. After either injecting or withdrawing something we should dispose it and dispose it correctly."*

Waste Disposal: All participants described the waste disposal methods in the same way. They explained the waste disposal system called the three bin system. Black containers are used for disposal of general waste. Infectious waste is discarded in red containers while yellow containers are for sharp objects. *NC4:*

> *"Mhm, we have the three bin system. The black, we have the black bins in which we dispose the general waste, the red bin where we dispose medical waste and the yellow bin in which we dispose the sharps."*

Participants discussed their perception of standard precautions and their own knowledge about the requirements and implementation thereof. Some participants identified lack of knowledge among healthcare workers as one of the reasons why compliance with standard precautions is generally poor in the healthcare sector. Participants explained that sometimes it is not clear how things are done so if one does not know exactly what to do then they may end up omitting such safety measure where they are indicated. *For example, RN4 said:*

> *I think another thing maybe err competence, maybe you're not competent with using some of the methods or precautions that are already in place. Competence plays a big part"*

Some participants think that other healthcare workers are not aware of the risks involved in some areas of healthcare services provision so they may not comply with the necessary standard precautions. *RN1 observed:*

"Yes lack of knowledge and on the dangers of, like I said there are different people, not only nurses that are in the facilities. There is the supporting staff, they should also be orientated and know the dangers of acquiring the disease because it seems as if we are refusing or playing when we're

supposed to use the mask that TB prevalence is very high and people are dying. That situation should say something to us"

On the other hand some participants believe that the knowledge is adequate but the healthcare workers are rather negligent to apply the knowledge that they have. *NC3 asserted:*

"I think its only ignorance because if we have the guide, the policies are there, like now I'm saying that signage …, everybody is able to see that there's that thing on the wall but we ignore to look at it"

4.3.1.2 Sub-theme 2: Enforcement of standard precautions

The participants related that although they have knowledge of standard precautions, reinforcement thereof through training and availability of guidelines is needed to motivate them to implement standard precautions adequately. They also believed that even nurses at the clinics, who are supervisors, fail to strengthen adequate implementation of standard precautions by their subordinates *RN1 said:*

> *"At the facility we have different levels of education and exposure to experience of the work but others are not even trained on those safety precautions. They …, let's take, for example, the lay counsellors. They're the ones that most of the time are doing TB screening but we, we don't emphasise the use of the mask to tell… like to tell them the risk of contracting TB, always use this. I think their level of knowledge on those standards is limited".*

Some participants are reported to have been trained on standard precautions while others said that the knowledge they have is only academic but the need for refresher training and supportive supervision on standard precautions was encouraged by many. *"RN3 gave her opinion:*

> *I think we, we as health professionals, we need some refreshment training regarding precaution measures to always strengthen the importance of taking those into consideration, those precautions into consideration, reminding us on how to protect ourselves and why … the… the… how do we put ourselves at risk, those things we have to always be reminded of so I think the training is needed often"*

Furthermore some participants emphasized the need for protocols and guidelines, made visual by using signage, to implement standard precautions consistently. *RN 4 commented:*

"I also think err maybe we needed some protocols to be printed on the walls and it's not often the case that we have those reminders like to remind us to put on the goggles and wash hands."

4.3.2 Theme 2: Practices of standard precautions

Participants were asked to elaborate on their individual practices of standard precautions and whether they consistently apply each standard precautionary measure as directed. *RN4 said:*

"I only use the apron in the delivery room, oh also for dressings, yah for some dressings".

Participants also described their practices and compliance to all standard precautions except needle safety and disinfection of surfaces and equipment. They described their needle safety and disinfection practices but failed to indicate compliance to those standard precaution elements. *RN3 explained:*

"Sharp objects like needles we normally don't recap after use… okay I don't recap, after giving an injection or maybe after using it even if it wasn't for injection it goes straight to the sharps container"

Poor compliance to almost all standard precautionary measures was observed among the participants and the decision to implement standard precautions for all the nurses depended on their risk perception.

4.3.2.1 Sub-theme 1: Compliance with standard Precautions

The participants were asked about consistency of the use of standard safety precautions. Compliance with standard safety precautions seemed to be a bit challenging. It has not always been a priority and it can hinder the implementation in everyday life. PHC is not considered to be as risky as hospital environment for the acquisition of infections. *PP said:*

"we don't basically practise strictly except in…, in a hospital setting, like I said I've been there before, now that I'm working in a clinic, in a hospital setting most definitely I have to follow such"

The participants did not confirm adherence to needle safety and disinfection of equipment and surfaces. They only described their practices of those standard precaution elements.

<u>Compliance with hand hygiene</u>

Compliance with hand hygiene, especially handwashing, was suboptimal among most participants but hand sanitizer seems to make hand hygiene much easier: *NA 4 commented:*

> *"Umm honestly speaking, I don't do it that way, I just look at my hands and if I see that they are dirty, it's the time that I will decide to use the sanitizer. Apart from that I will not use it. Sometimes I use it when I want to do something like I want to get something from my pocket then I'll see that these gloves will make my clothes dirty. That is when I'll use a sanitizer. Apart from that, I will not, I don't use it every time."*

Most registered nurse midwifes and nursing assistants reported not to be compliant sometimes but the majority of nurse clinicians reported good adherence to hand hygiene, especially the use of hand sanitizers. All the participants reported that hand washing has a lot of challenges but even with the alternative use of hand sanitizers, nursing assistants and registered nurses reported that they do not always adhere to hand hygiene. They merely assess how clean their hands look instead of following the guidelines for hand hygiene practice.

Compliance with protective equipment

Gloves are the most adhered to protective equipment as almost all the participants reported to put them on all the time when they anticipate contact with body fluids from clients. *RN2:*

> *"Yes, when, when I expect that I'm gonna be in contact with the body fluids then I can use the gloves*".

They even reported to wear gloves just to touch patients even when there is no risk of contact with body fluid. *RN1 said:*

> *"I wear gloves when I have to draw blood or examine a patient physically. If I have to touch a patient I wear gloves"*

Adherence to other protective equipment such as aprons, masks, goggles and gum-boots was suboptimal for all cadres. Individual participants reported to use their own perception of their risks of exposure to blood and body fluids in order to decide on the use of other PPE, even if the procedure itself anticipates contact. As an example, one participant said that she would not wear an apron while dressing some wounds but she would wear it for dressing others. One wears goggles while assisting with some deliveries but omit goggles with others*: NA 4 explains:*

> *"Okay aprons, I use them when I draw blood; Goggles I only use when I assist in labour sometimes when I, I only use them when I'm not sure about the status of the patient*

(giggle) so for that person I'll put them because I want to protect myself apart from that I don't use them".

Compliance with respiratory hygiene and cough etiquette

While describing how they apply respiratory hygiene and cough etiquette requirements, participants report partial compliance *NA3 confessed:*

"I am supposed to wear a mask as soon as I get to work but it does not allow me to breathe properly so I don't use it. I don't protect myself at all."

They reported to open the windows and doors when they get to work, triage clients for cough and practice proper coughing technique. *NC1narrated:*

"Let me start with the triage. When the patient arrives, we triage all coughers and give them masks so that they do not infect other patients. When somebody is coughing, we explain that when they are coughing they should cover their mouths and their noses with a clean cloth or a paper that they can dispose when they leave the premises or they can use their cloths. Yes they shouldn't cough openly because the droplet … or they should when they sneeze, they can infect other people if they have infectious coughs."

However most of them reported not to use respiratory masks as consistently as required. Only one clinic reported consistent use of respiratory mask and that was the clinic which reported a high prevalence of TB. Participants from that clinic reported the use of masks while in contact with the patients throughout the day but the participants from other facilities reported to use the respiratory masks only when there is an anticipated risk of respiratory infection such as with suspected and confirmed TB clients: *RN 1 commented on the use of masks:*

"Err about masks, we have N95s, we always have N95 masks but, personally I only wear N95 when I have to consult a TB patient, after he or she has left I take off the mask and I continue to see other patients without a mask."

Compliance with waste disposal practices

Participants reported that in their facility the three bin system is adhered to every time. Each participant described how each plastic or container is used and that they use them accordingly all the time. In the

black plastic bags they discard general waste; red plastic bag is for medical/biological waste and yellow containers are for sharps. *NC1 responded:*

> *"We've got the three bin system. The first one is for the…, the waste that is not infectious we place it in black plastic bags. These are the papers, containers of food, but not food because we don't want rats in the clinic. Non-infectious things are placed in the black plastic bags. So in the red liner we place all hazardous waste; that is dressings with blood or we put placenta or anything that is infectious. The needles we place in the, in the hana what do we call it, sharps containers and also the racers that we use, the blades also because sometimes we use the blades."*

4.3.2.2 Sub-theme 2: Risk Perception

Risk perception is one's own discretion of the risk of exposure to adverse events if standard precautions are not adhered to. Participants declared that they use their individual discretion to assess the necessity to comply with standard precautions. They believed that some procedures have minimal risk associated with them and although they require standard precaution, they can still be omitted. For example most participants reported not to wear gloves when performing venipuncture because they believe that there is low risk of contact with blood or body fluids. *RN1* said*:*

> *"we don't really feel the need to protect ourselves sometimes, let's say while drawing blood, some nurses have been doing this procedure for a long time and they will tell you when you ask the nurse, "why don't you wear gloves", and they will tell you: "no I have been doing this for a long time so I don't need to wear gloves, you see"".*

Some do not wear aprons while doing wound dressing while others report not to wear goggles and gumboots while conducting deliveries only because of the anticipated low risk of exposure to blood and body fluids. "*NA3 comments:*

> *"Sometimes you just think the infections can't possibly pass, like you find that err… in the dressing room you are just dressed in with your clothes you don't care about wearing the apron".*

4.3.3 Theme 3: Barriers to implementation of standard precautions

Participants were asked about the factors that influence the implementation of standard precautions. Participants clearly believed there are many barriers that hinder the implementation of standard precautions in the healthcare sector in Lesotho, as compliance is very poor. They reported the factors such as infrastructure limitations, procurement issues, culture, work situations and discomfort. *NC4:*

"Well, with us here when it comes to washing hands from patient to patient as needed, most of the time we don't have running water, umm another thing with wearing gloves, I don't know it's that, that, that thing, that mentality of not finding it necessary, especially when there's no open wound, it feels like you're…, you're …, you're discriminating against the patient. With the use of masks it's the same like you're making them uncomfortable, myself with wearing gloves like while inserting the IV line or drawing blood, I feel so uncomfortable most of the time, I don't know, I don't most of the time find fitting gloves."

4.3.3.1 Sub-theme 1: Infrastructural limitations

Infrastructural limitations are unavailability of structures such as basins in consultation rooms or running water. Participants reported that some consultation rooms do not have hand washing facilities or running water. This hinders hand washing. Others reported that the setup in the rooms is such that the sink or the disposal bins are far from the consultation tables, thus hindering regular hand hygiene and proper waste disposal. *"RN 1said:*

> *"I'll talk about where I work at the ART corner. In my department there's no basin so handwashing is not done often, but I have a sanitizer which I use, not always but most of the time. I use a sanitizer maybe after handling something I consider contaminated or unclean, I sanitize my hands but washing hands, I wash hands not many times because I have to go out of the house to the tap to wash my hands"*

4.3.3.2 Sub-theme 2: Procurement issues

Procurement issues included unavailability of commodities such as handwashing soaps, sanitizers, gloves, coats, appropriate shoes. Participants reported a shortage of supplies such as PPE, hand soaps, sanitizers and waste disposal containers. *"RN 3 argued:*

"And the other barrier I think is inadequate supply of resources e.g. stock outs of masks, or stock outs of any other equipment like sharps containers maybe or red plastics maybe, that could be also the barrier to the practice of standard precautions ."

Some participants reported not that they buy their own sanitizers, therefore they do use it as often as they should in an attempt to save it. *RN3 clarified:*

"I have a sanitizer which I use, not always but most of the time I use a sanitizer maybe after handling something I consider contaminated or unclean. It's a small bottle so I save".

Some reported unavailability of PPE such as shoes and goggles while for others PPE such as gloves and aprons run out of stock. Moreover, the special plastic bags that line the waste disposal bins also run out, thus hindering the implementation of standard precautions.

4.3.3.3 Sub-theme 3: Work situations

The work situations such as emergency cases can also hinder proper implementation of standard precautions. Participants reported that in emergency situations like when a woman arrives with a baby already at the point of giving birth. It becomes hard to comply to all the necessary PPE because they are time consuming and may compromise the baby's life. *RN 3 says:*

"Not all the time, sometimes the woman can arrive already fully dilated. There is no time to wear gumboots, no time to wear goggles. All you need is just an apron and gloves then you deliver the baby."

Sometimes in an emergency like a road traffic accident, it's impossible to disinfect surfaces in between the patients because it's time consuming. Saving the life of the next client is more important.

4.3.3.4 Sub-theme 4: Cultural issues

Cultural issues here mean things which are done at this work place because they are common practices but were not supposed to be done. An example given by the participants was the one of not wearing gloves when drawing blood because its common practice and most people believe gloves reduce dexterity of the procedure. *In her own words, RN 1 said:*

"I think the attitude is that, the attitude that we have towards maintaining the, the standard procedures, we, we know we have to do things but we just don't do them".

Moreover it is culturally viewed as discrimination to touch a family member, friend or someone you know personally using gloves or a respiratory mask so the nurses end up omitting the use of such PPE with such clients

4.3.3.5 Sub-theme 5: Physical Discomfort

Physical discomfort from using some PPE was also reported to prevent adequate implementation of standard precautions. Most participants reported not to use respiratory masks because they are uncomfortable and hinder breathing. Moreover they testified that being in full PPE may make clients uncomfortable. They may feel like they are very sick so the nurses' sometimes omit some of the PPE for the comfort of the patient. *NC 2 reiterates:*

"Like I've said, it's a personal thing which I've seen though I haven't asked why. Most of them are very uncomfortable putting on a mask every time when they're doing their jobs from …, from 7:00am to 16:30 in a mask, much as we know the benefits but it's very uncomfortable."

4.4 SUMMARY

The findings from the collected data indicate knowledge and understanding of standard precautions by nurses in the primary healthcare sector. However, adherence to those standard precautions is poor except for waste disposal which seems to be well adhered to by the nurses from all cadres. Work related factors such as poor infrastructure and shortage of equipment and human factors like individual risk perception and cultural practices influence the implementation of standard precautions in primary healthcare. Education and training also play a part in adherence to standard precautions.

CHAPTER 5
DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

2.1 INTRODUCTION

The overview of the research was presented in Chapter one and the literature review on standard precautions in chapter two. The research design and methods were highlighted in Chapter three and the findings of the study in Chapter four. In this chapter, the main findings from the analysed interviews in chapter four are discussed, providing the basis for the study recommendations. The limitations of the study and recommendations for future research are also discussed before the conclusion of the chapter.

5.2 DISCUSSION

The aim of the study was to explore the perceptions of the nurses on their implementation of the standard precautions at the primary healthcare clinics in Leribe district Lesotho. The CDC, (2019:57-206) developed the standard precautions and recommended how and when each standard precaution components should be implemented to ensure safety in the healthcare sector.

Previous studies established that compliance to standard precautions is poor in the health sector globally and that it is worse in developing countries than it is in developed countries. The studies that found poor compliance were, however mostly done in hospital settings (Akagbo et al., 2017:6; Giard et al., 2016:11; Moralejo et al., 2018:8; Pandit & Kulkarni, 2016:333; Powers et al., 2016:4; Punia et al., 2014:2), with scarce literature in primary healthcare settings

Abdulraheem et al., (2012:4), Colet et al., (2017:428), Cutter & Jordan (2012:958-960), Efstathiou et al., (2011:6-7), Kim & Oh, (2015:111-113), Maroldi et al., (2017:5) identified the factors such as education and training, management strategies, self-efficacy, work situations, the perceived risks and barriers as well as infrastructure and resource limitations to influence the applications of standard precautions either positively and negatively.

The findings of this study reflect the participants' understanding of standard precautions as they thoroughly described what standard precautions are, and the required application for each standard precautions component. Participants also narrated their practices of standard precautions, stressing that their compliance depends on individual risk perception of the procedure to be performed, hence

the reflected poor adherence to standard precautions among all the participants. This finding is similar to those reported by several studies on suboptimal compliance to standard precautions globally (Akagbo et al., 2017:4; Giard et al., 2016:12; Moralejo et al., 2018:8; Powers et al., 2016:4).

Furthermore the participants identified the barriers that hindered adequate implementation of standard precautions. They are infrastructure limitations, procurement issues, work situations, cultural issues and discomfort. These findings are now discussed in relation to the study objectives and existing literature.

5.2.1 Objective 1: To explore the nurses' understanding of standard precautions

Knowledge and understanding of standard precaution is the ability to define the concepts and identify the goals and ways of implementing the standard precaution (Oxford dictionary). The CDC (2019) developed standard precautions, describing each component and recommending when and how each component is performed.

In this study, the basic knowledge of standard precautions among all the participants was evident in the thematic analysis of the data. Participants described the concepts of standard precautionary measures and their recommended application. *NC3 summarizes her knowledge of basic standard precautions as:*

> *"By standard precautions I understand that each and every health worker has to bear in mind or understand that there're those measures that she/ he must obey on her/his daily activities for her safety, for example we all know that as nurses we have to wear our protective clothing every time we start our daily activities. For example we have to wear our gloves and change them between each and every patient, after injecting the patient, we don't recap the needle. We simply put the needle as it is in the, box where it should be. Again we have to make sure that our rooms are very, very, very clean and tidy and on the walls there must be signage; by signage I mean there must be a written message that shows where the dust bin is; where the safety box is; where one should put used equipment."*

However, there was a difference in knowledge and application on disinfection of equipment and surfaces among the three nursing cadres that participated in the study. Whilst some participants use hypochlorite solution to disinfect surfaces and equipment, others reported soaking equipment in glutaraldehyde after cleaning it with water and soap. Whilst the literature is quite clear on the disinfection of surfaces and equipment, as WHO recommends the use of water and soap to remove debris and organic matter and disinfection with chemical disinfectant to kill micro-organisms (WHO

Interim Guidelines, 2020:2). The findings of this study found that knowledge about surface cleaning and disinfection is lacking.

Some participants are of the opinion that lack of knowledge and competence for some people has led to non-compliance to standard precautions as described in the thematic analysis in sub-theme two. *RN2 says:*

> *"I think lack of knowledge…If I have no idea what standard precautions are, that says I cannot practice them"*.

These perceptions were congruent with those reported by Maroldi et al., (2017:5) in one study in the primary healthcare sector in Brazil, where lack of knowledge due to insufficient training was reported.

In this study, participants declared that reinforcement of standard precautions was inadequate, as they reported lack of training and inaccessibility of standard precautions guidelines. *RN1complained:*

> *"We have a …, I arrived here in 2016. We, we, we haven't had any training on safety precautions… it's something I know from school, that we have to do this and this and that or when we were interacting with other nurses telling us, no that one you should not do, do this, not a real training".*

In the same way, other reviewed studies attest that acquisition of knowledge through education and training improved compliance to standard precautions (Cutter & Jordan, 2012:958-960; Orlandi & Figueiredo, 2013:477; Nugmanova et al., 2015:200).

Furthermore participants also reported reluctance to monitor and encourage subordinates to adequately implement standard precaution *RN1 commented:*

> *"At the facility we have different levels of education and exposure to experience of the work so others are not even trained on those safety precautions, like they …, let's take for example the lay counsellors, they're the ones that most of the time are doing TB screening but we, we don't emphasize the use of the mask to tell, like tell them the risk of contracting TB, always use this."*.

Several other studies have also corroborated that management strategies such as development of effective infection control programs and policies, enforcement of implementation of standard precautions and continuous monitoring by management are the most effective influencers of compliance to standard precautions (Nugmanova et al., 2015:200; Cutter & Jordan, 2012:960).

The first study objective, to explore nurses' understanding of standard precautions in daily clinical practice, was achieved. The study found out that participants understood implementation of standard

precautions as they were to define the concepts and identify the goals and ways of implementing standard precautions.

5.2.2 Objective 2: To describe the nurses' current practices with regard to the implementation of standard precautions

In this study, participants described their individual practices and compliance to standard precautions. The compliance with each standard precaution component varied amongst the participants and was seemingly related to the participants' perception of the risk related to nursing actions

Most participants reported that hand washing with water and soap was unsustainable but the use of hand sanitisers makes hand hygiene more feasible. RN1 said:

> *I'll talk about where I work at the ART corner. In my department there's no basin so handwashing is not done often but I have a sanitizer which I use most of the time, not all the time but most of the time"*

Even whilst the use of hand sanitisers made hand hygiene more feasible, registered nurses and nursing assistants nevertheless reported poor compliance to hand hygiene. Similar findings of inadequate compliance to hand hygiene were reported in another study in a Primary healthcare setting in France although not specific to the types of hand hygiene (Maroldi et al., 2017). However studies in hospital settings in France, India and Uganda reported better compliance to hand hygiene at that setting (Giard et al., 2016:11; Punia et al., 2014:2; Wasswa et al., 2015:6). Therefore re-enforcement of the importance of hand hygiene and its compliance even in primary healthcare is essential.

Compliance to the use of personal protective equipment was poor among all the nursing cadres who participated in the study. About 83% of participants reported to adhere mostly to the use of gloves as they all described their use when they anticipated contact with blood and body fluids, even though some of them even use them whenever there is a direct contact with the patients.

Participants described an inconsistent use of aprons, goggles, gumboots and masks, with masks being the most non-adhered to apparatus. *NA3 commented on them:*

> *"The mask, hey they cause shortness of breath, this ones, the N95, they are too tight and uncomfortable*."

This was also observed in several studies conducted by Pandit & Kulkarni, (2016:333), Punia et al. (2014:2), Wasswa et.al. (2015:2), where adherence to the use of gloves was good but the use of other PPE components was poor.

All the participants in this study inadequately described needle safety practices. They only talked about the disposal of sharps. NC1 said*:*

> *"Err after opening the needles you don't have to recap them, because you might prick yourself, then they have to be disposed properly in the sharps container, you have to have the drawing needle first and the injecting needle".*

However, they all complied with the basics of needle safety such as discarding and not re-capping the used needles and sharps immediately after use. In the current study, needle safety practices were better adhered to than was the case in most reviewed studies (Gadzama et al., 2014:137; Giard et al., 2016:11, Wasswa et al., 2015:6).

The practice of respiratory hygiene and cough etiquette was described adequately by all the nurses although most of them reported non-compliance to the use of face masks *RN 1 observes:*

> *"Err about masks we have N95s, we always have N95 masks but I personally I only wear N95 when I have to consult a TB patient, after he or she has left I take it off and I continue to see other patients without a mask"*.

One clinic with a high prevalence of TB reported adherence to the use of respiratory mask. Compliance to respiratory hygiene and cough etiquette was not reported in any of the reviewed studies, However, compliance to the use of face masks was discussed with other PPE and was reported to be suboptimal in all these studies (Pandit & Kulkarni, 2016:333; Punia et al., 2014:2; Wasswa et al., 2015:6),.

In this study, the practices of disinfection of equipment and surfaces varied greatly, and may be related to the knowledge participants' described about this concept. However, participants described that they do not reuse disposable equipment, and they clean and disinfect non disposable equipment and surfaces, although not congruent with current literature.

The practice of waste management and disposal was described uniformly by all the nurses and was the most adhered to standard precaution component among all the cadres at all the health facilities. These findings were different from the findings in other studies (Colet et al., 2017:425-427; Gadzama et al., 2014:137),which identified suboptimal compliance to waste management and disposal.

Participants in this study reported that their decision to comply with standard precautions depends on their risk perception of the procedure to be performed not entirely on the standard precautions recommendations*. NA3 warned:*

"Sometimes you just think the infections can't possibly pass, like you find that err in the dressing room you just dress with your clothes you don't care about wearing the apron".

If they anticipate the risk of exposure to be low, they ignore the standard precautionary measure and in cases where the risk of exposure is anticipated to be high that's when the standard precautions are implemented adequately, regardless of whether the standard element is recommended or not. Efstathiou et al., 2011:6-7 as well as Maroldi et al., 2017:3) also reported that healthcare workers implement standard precautions based on their risk perception.

The second objective of the study was to describe the nurses' current practices with regard to the implementation of standard precautions in daily clinics was also achieved. The study findings are congruent with the literature with regard to the suboptimal compliance to standard precautions globally (Akagbo et al., 2017:6; Giard et al., 2016:13; Moralejo et al., 2018:8; Powers et al., 2016:4).

5.2.3 Objective 3: To explain the barriers to implementation of standard precautions

Various studies have been conducted on the barriers to the implementation of standard precautions. Abdulraheem et al., (2012:4), Colet et al., (2017:424), Cutter & Jordan, (2012:961), Efstathiou et al., (2011:6), Kim & Oh, (2015:113) Maroldi et al., (2017:5) identified the factors such as education and training, management strategies, self-efficacy, perceived risks and barriers, work situations and infrastructure as well as resource limitations to influence the application of standard precautions either positively or negatively. The findings of this study also related infrastructure limitations, procurement issues, culture, work situations and physical discomfort to hinder compliance with the implementation of standard precautions.

Maroldi et al. (2017:5) reported that infrastructure limitations hider adherence to standard precautions in primary healthcare. The present study also finds that infrastructure limitations such as the unavailability of hand washing facilities and lack of hot running water in some health facilities hinder adequate hand hygiene. The participants complain about limited hand washing facilities and recommend the use of hand sanitizers as a solution to the identified infrastructure challenge. However, some participants do not comply with the use of hand hygiene. Hand sanitisers are not used consistently. *NA4 complained:*

I just look at my hands. If I see that they are dirty, I decide to use the sanitizer. Otherwise I do not use it. Sometimes I use it when I want to do something. For example, if I want to get something from my pocket and I see that the gloves might soil my clothes, then I use the sanitizer. Otherwise I kannete (really) I do not use it".

Most participants also reported inadequate supply of personal protective equipment such as gloves, aprons, masks and gumboots. They perceived limited availability of PPE as a barrier. They have to improvise and sometimes save PPE for more risky procedures. They made comments such as the following,

> *"PP: most of the time we, unless okay in very rare cases we don't practice because we avoid, we run out of gloves so we can't, we have to really save them for rainy days, so you can't just use them with every client because you're gonna need the same examination gloves to conduct a delivery because you don't have surgical gloves".*

Similar findings were made in a study by Efstathiou et al. (2011:5) where the nurses reported unavailability of PPE to be a barrier to adequate implementation of standard precautions.

Work situation such as emergency cases also hinders proper implementation of standard precautions. One may end up omitting some protective equipment because one is under pressure to save the lives of the clients. *NA3 comments:*

> *"Honestly I forget them, for example if I get to the labour ward and the mother is already pushing I'll realize after that I didn't protect myself"*.

Several studies also attest that complying to standard precautions during an emergency situations can put patients' lives at risk, hence the nurses give the patients' care priority over complying to PPE (Akagbo et al., 2017:4; Holla et al., 2014:103).

Most participants reported that they ignore some of the standard precautions just because it is common practice in their work place. Some of them said that they do not comply because things like gloves reduce dexterity of procedures such as blood withdrawal. *NA3 explained:*

> *"Sometimes they say they don't feel, sometimes you, they palpate the vein and they don't feel it when they're drawing blood using gloves".*

Studies by Abdulraheem et al., (2012:4), and Efstathiou et al. (2011:9) report similar findings of reduced dexterity of gloves and being used to certain practices of incompliance as some of the barriers to implementation of standard precautions.

Most participants report discomfort with the use of PPE such as mask and goggles; therefore they only use them in specific situations, not exactly as they are supposed to be used. *NC4 says:*

> *"Umm another thing with wearing gloves, I don't know, it's that, that, that thing, that mentality of not finding it necessary especially when there's no open wound. It feels like you're, you're, you're discriminating against the patient. With the use of masks it's the same, you're making*

them uncomfortable. When inserting the IV line or drawing blood, I feel uncomfortable most of the time, I don't know. Most of the time I don't find fitting gloves."

Other nurses report that they ignore some standard precautionary measures such as wearing all the PPE for fear of causing discomfort to the clients. Several studies also report the physical discomfort of wearing PPE while other studies report discomfort that the client may feel when being attended by someone wearing certain PPE such as gloves and masks (Akagbo et al., 2017:4; Efstathiou et al., 2011:5; Kim & Oh, 2015:111).

The third objective was to identify the barriers to the implementation of standard precautions in the clinics in daily clinical practice. The objective was met as the participants identified the following barriers to the implementation of standard precautions: infrastructure limitations, procurement issues, culture, work situations and discomfort.

5.3 LIMITATIONS OF THE STUDY

- Since this is a qualitative study conducted in a primary healthcare setting, the findings may not be generalizable to other healthcare setting such as hospital settings.

- The study focused on the perceptions of the nurses only. Therefore the findings are limited to the nursing cadres while other healthcare workers' perceptions remain unknown.

5.4 CONCLUSIONS

The aim of this study was to explore the perceptions of the nurses on their implementation of standard precautions at the primary care clinics in Leribe district, Lesotho. The study was guided by the research question, "What are the perceptions of primary care clinic nurses on their implementation of standard precautions?" The findings of the study answer this question through a thorough exploration of the nurses' perceptions in relation to their understanding of standard precautions, individual practices of standard precautions and the barriers to adequate implementation of standard precautions in daily clinical practice.

Nurses have adequate knowledge and understanding of standard precautions and their recommendations for implementation in the healthcare. They effectively described the concept, its application, when and how each standard precaution component is recommended and implemented.

However compliance to standard precautions among all nursing cadres is suboptimal although the participants describe the needle safety, the use of gloves and waste disposal as the most adhered to standard precautions. In this study, only the Nurse Clinicians were compliant with hand hygiene, while other cadres' hand hygiene practice is suboptimal. Other PPE such as masks, gumboots, goggles and

aprons use is suboptimal for all the nurses. Compliance to respiratory hygiene and cough etiquette including the disinfection of equipment and surfaces is not clearly established.

The factors that are perceived to hinder the implementation of standard precautions were identified as infrastructural limitations, procurement issues, cultural issues, work situations and discomfort.

The research question was answered as the perceptions of primary healthcare nurses were explored effectively. The understanding of the concept standard precautions, practices of standard precautions and perceived barriers to implementation of standard precautions were established.

5.5 RECOMMENDATIONS

5.5.1 Recommendation 1:

The study identified that there is inadequate education and training on standard precautions. Participants had different ideas on some elements of standard precautions such as disinfection of surfaces and equipment and the vaguely described needle safety. This shows that there is a need for refresher training sessions on such issues. Several studies have emphasized the need for education and training in ensuring adequate implementation of standard precautions (Cutter & Jordan, 2012:958-960; Maroldi et al., 2017:5; Nugmanova et al., 2015:200; Orlandi & Figueiredo, 2013:477). Therefore scheduled training on standard precautions and adequate use of PPE are recommended in order to improve the implementation of standard precautions in primary healthcare clinics. The District Health Management Team can schedule the training sessions at least once a year for different nursing cadres

5.5.2 Recommendation 2:

The study pointed out to the unavailability of standard precautions guidelines, operating procedures and policies at the clinics. Some participants reported unavailability of both the standard precautions guidelines and signage at the clinics as the reminders on when and how to apply standard precautions. (Cutter & Jordan, 2012:958-960; Nugmanova et al., 2015:200) observe that the development and availability of policies and guidelines are essential to ensure adequate compliance to standard precautions. Thus the study recommends the development of standard operating procedures and policies and avail them to the primary health care sector. Posters on the application of standard precautions can also be created and displayed in strategic areas of the clinics. This will also help to avail the procedures such as hand hygiene as poor compliance.

5.5.3 Recommendation 3:

The inadequacy of the resources such as PPE is found to be a barrier to the implementation of standard precautions, as is the case in several other developing countries (Efstathiou et al., 2011:5; Nderitu, Mill, & Richter, 2015:629-631). It is therefore recommended that the DHMT ensures adequate supply of PPE to healthcare facilities through proper budgeting and quantification.

5.5.4 Recommendation 4:

Poor supervision and monitoring was also identified in the findings of this study. Participants report that they do not adequately supervise and monitor the subordinates. The PHC is not considered as being as risky as a hospital setting. This leads to negligence to complying with the standard precautions. Giard et al. (2016:12), and Orlandi & Figueiredo (2013:477) proposed that the adoption of good leadership strategies, team monitoring and guidance as well as action programs such as communication aids and teaching tools are effective ways of encouraging compliance with standard precautions. It is therefore recommended that clinics have an effective infection control committees for compliance monitoring and reinforcement through monthly meetings. The DHMT can also include stand precautions compliance monitoring and reinforcement in their scheduled quarterly supervisions.

5.5.5 Future research

The following areas are proposed for future research:

- A prevalence study on occupational infection to establish the rate at which the healthcare workers in Lesotho acquire occupational infections. Currently there is no literature on the rate of occupational infections in Lesotho.

- Perceptions of healthcare workers on the implementation of standard precautions in a hospital setting so as to establish how different healthcare cadres view the implementation of standard precautions because this study cannot be generalized to other healthcare settings and different healthcare cadres.

5.6 DISSEMINATION

Once Stellenbosch University has granted permission, this research study will be published. It will also be presented to the Ministry of Health Lesotho Research Committee, the district public healthcare meetings, conferences, academic platforms and disseminate to the clinics.

5.7 CONCLUSION

As a registered nurse midwife working at the clinic, I had noticed a lot of percutaneous, mucus membrane, airborne and droplet exposure to infections among the nurses who work at the clinics. Moreover, Lesotho has high prevalence of HIV, it is ranked number two in the world and number one for the prevalence of TB. This burden of infectious diseases and a shortage of staff put healthcare workers at a high risk of occupational exposure to infections. This situation led to an interest to explore the perceptions of the nurses at the clinics on implementation of standard precautions to establish their safety.

The literature was explored on the implementation of standard precautions in the healthcare sector. Standard precaution measures were described, compliance to those measures and factors contributing to adequate implementation or lack thereof were also explored. No literature was found in Lesotho on this issue.

The nurses in primary healthcare clinics in Leribe district Lesotho, were interviewed to explore their perceptions on the implementation of standard precautions. Their understanding of the concept and its application, compliance and barriers were assessed. The findings of the study were coherent with the reviewed literature.

The key findings are poor procurement of equipment and lack of knowledge; therefore, some recommendations are made: to adequately budget for the necessary equipment, scheduled training sessions for healthcare workers, development of standard precautions protocols and the display of job aids in strategic areas at the clinics for use of standard precautions. It is assumed that these measures would improve compliance to standard precautions and reduce occupational exposure to infections.

REFERENCES

Abdulraheem, I., Amodu, M., Saka, M., Bolarinwa, O. & Uthman, M. (2012). Community medicine & health education knowledge , awareness and compliance with standard precautions among health workers in North Eastearn Nigeria. *Community Medicine & Health Education*, *2*(3), 10–14. https://doi.org/10.4172/jcmhe.1000131 Accessed 18 August 2018

Akagbo, S. E., Nortey, P., & Ackumey, M. M. (2017). Knowledge of standard precautions and barriers to compliance among healthcare workers in the Lower Manya Krobo District , Ghana. *BMC Research Notes*, *10*, 1–9. https://doi.org/10.1186/s13104-017-2748-9 Accessed 18 August 2018

Auta, A., Adewuyi, E. O., Tor-anyiin, A., Aziz, D., Ogbole, E. & Ogbonna, O. (2017). Health-care workers ' occupational exposures to body fluids in 21 countries in Africa : systematic review and meta-analysis. *Bull World Health Organization*, (April), 831–841.

AVERT. (2018). HIV and AIDS in Lesotho | AVERT. Retrieved from http://www.avert.org/professionals/hiv-around-world/sub-saharan-africa/lesotho Accesses 02 July 2018

Beyera, G. K. & Beyen, T. K. (2014). Epidemiology of exposure to HIV / AIDS risky conditions in healthcare settings : the case of health facilities in Gondar City , North West Ethiopia. *BMC Public Health*, *14*(1283), 17. https://doi.org/10.1186/1471-2458-14-1283 Accessed 11 December 2019

Brink, H., van de Walt, C. & van Rensburg, G. 2012. Fundamentals of Research Methodology for Health Care Professionals. 3rd edition. Cape Town: Juta and Compony

Bolderston, A., & Mrt, T. (2012). Conducting a Research Interview. *Journal of Medical Imaging and Radiation Sciences*, *43*(1), 66–76. https://doi.org/10.1016/j.jmir.2011.12.002 Accesed 11 December 2019

Burns, N. & Grove, S. K. (2011). *Understanding Nursing Research, Building an Evidence-Based Practice* (6th ed.). St Louis: Saunders Elsevier Publishers.

CDC. (1996). Guidelines for Isolation Precautions in Hospitals. Retrieved from https://www.cdc.gov/infectioncontrol/guidelines/isolation/index.html Accessed 25 June 2018

CDC. (2016). Standard Precautions for All Patient Care: Basics Infection Control CDC. Retrieved from https://www.cdc.gov/infectioncontrol/basics/standard-precautions.html Accessed 25 June 2018

CDC. (2019). Guideline for Isolation Precautions : Preventing Transmission of Infectious Agents in Healthcare Settings, 57–206. Retrieved from https://www.cdc.gov/infectioncontrol/guidelines/isolation/index.html%0A2007 Accessed 01 March 2020

CDC, C.-19 R. T. (2020). Characteristics of Health Care Personnel with COVID-19 TITTLE MISSING HERE—, *69*(15), 477–481.

Colet, P. C., Cruz, J. P., Alotaibi, K. A., Colet, M. K. A., & Islam, S. M. S. (2017). Compliance with standard precautions among baccalaureate nursing students in a Saudi university : A self-report study. *Journal of Infection and Public Health*, *10*(4), 421–430. https://doi.org/10.1016/j.jiph.2016.06.005

Creswell, J. (2014). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches* (4th ed.). SAGE Publication, Inc.

Cutter, J. & Jordan, S. (2012). Inter-professional differences in compliance with standard precautions in operating theatres : A multi-site , mixed methods study. *International Journal of Nursing Studies*, *49*(8), 953–968. https://doi.org/10.1016/j.ijnurstu.2012.03.001

Dikko, M. (2016). Establishing Construct Validity and Reliability : Pilot testing of a qualitative interview for research in Takaful (Islamic Insurance): Establishing construct validity and reliability : Pilot Testing of a quLITtive interview. *The Qualitative Report*, *21*(3), 521–528.

Efstathiou, G., Papastavrou, E., Raftopoulos, V., & Merkouris, A. (2011). Factors influencing nurses' compliance with Standard Precautions in order to avoid occupational exposure to microorganisms. A focus group study BMC Nursing Full Text. *BMC Nursing*, *10*(1), 1–12. Retrieved from http://www.biomedcentral.com/1472-6955/10/1 Accesses 07 June 2018

Gadzama, G. B., Bawa, S. B., Ajinoma, Z., Saidu, M. M., & Umar, A. S. (2014). Injection safety practices in a main referral hospital in northeastern Nigeria. *Nigerian Journal of Clinical Practice*, *17*(2), 134–139.

Giard, M., Laprugne-garcia, E., Caillat-vallet, E., Eng, R., Pharmd, D. V., Eng, M. E. & Laland, C. (2016). Compliance with standard precautions : Results of a French national audit Anne Savey MD a , b , and on behalf of the French Group for Infection. *American Journal of Infection Control*,

44(1), 8–13. https://doi.org/10.1016/j.ajic.2015.07.034 Accessed on 07 June 2018

Grove, S., Burns, N. & Gray, J. R. (2013). *The practice of Nursing Research: Apraisal Synthesis and Generation of Evidence* (7th ed.). St Louis: Elsevier Sauders.

Hammarberg, K., Kirkman, M. & De Lacey, S. (2016). Qualitative research methods: When to use them and how to judge them. *Human Reproduction*, *31*(3), 498–501. https://doi.org/10.1093/humrep/dev334 Accessed on 30 June 2018

Holla, R., Kanchan, T., Kumar, N., Unnikrishnan, B., Rekha, T., Mithra, P. & Darshan, B. B. (2014). Perception and Practices of Standard Precautions among Health Care Professionals at Tertiary Care Hospitals in Coastal South India. *Asian Journal of Pharmaceutical and Clinical Research*, *7*(2), 101–104.

Kim, K. M. & Oh, H. (2015). Clinical Experiences as Related to Standard Precautions Compliance among Nursing Students : A Focus Group Interview Based on the Theory of Planned Behavior. *Asian Nursing Research*, *9*(2), 109–114. https://doi.org/10.1016/j.anr.2015.01.002 Accessed 08 June 2018

Kingdom of Lesotho 2016 LESOTHO POPULATION AND HOUSING CENSUS. (2016), *III*.

Lesotho, M. (2020). The COVID-19 Outbreak Situation Report , Lesotho : 2020 Ministry of Health Lesotho, (July).

Lesotho Public Health Sector Expenditure Review. (2017), 85.

Lincoln, Y., & Guba, E. (1985). Establishing Trustworthiness. In *Naturalistic Inquiry* (pp. 288–326). Newbury Park CA: SAGE Publication, Inc.

Luo, Y., He, G., Zhou, J. & Luo, Y. (2010). Factors impacting compliance with standard precautions in nursing , China. *International Journal of Infectious Diseases*, *14*(12), e1106–e1114. https://doi.org/10.1016/j.ijid.2009.03.037

Mack, N., Woodsong, C., MacQueen, K., Guest, G. & Namey, E. (2005). *Qualitative Research Methods: A Data collector's Field Guide*. North Carolina USA: Family Health International.

Maroldi, C., Maria, A., Angélica, A., Dias, L., Kawagoe, J. Y., Padoveze, M. C., … Timmons, S. (2017). Adherence to precautions for preventing the transmission of microorganisms in primary health care : a qualitative study. *BMC Nursing*, *16*(49), 4–11. https://doi.org/10.1186/s12912-017-0245-z Accessed 28 november 2018

Massinga, Z. E. (2012). Compliance with universal precautions in Northern Kwa-Zulu Natal operating theatres, North West University,150. http://hdl.handle.net/10394/7031

Merriam, B. S., & Tisdell, J. E. (2016). *Qualitative Research: A Guide to Design and Implementation* (Fourth edition). San Fransisco: Jossey-Bass A Wiley Brand.

MOH Lesotho. (2012). Health Care Waste Management Guidelines. Retrieved from JRMX20110920HCWGuidelinesFinalv11 Accessed 07 June 2018

Moralejo, D., R, E. D., Ra, P., Barretti, P., Corrêa, I., Moralejo, D. & Corrêa, I. (2018). Improving adherence to Standard Precautions for the control of health care-associated infections (Review). *Cochrane Library*, (2), 41. https://doi.org/10.1002/14651858.CD010768.pub2.www.cochranelibrary.com Accessed 12 November 2018

Mugomeri, E., Chatanga, P., Lefunyane, M., Ruhanya, V., Nyandoro, G., & Chin'ombe, N. (2015). Adherence to tuberculosis infection control guidelines by nurses in Lesotho. *American Journal of Infection Control*, *43*(7), 735–738. https://doi.org/10.1016/j.ajic.2015.03.016 Accessed 27 June 2018

Ndejjo, R., Musinguzi, G., Yu, X., Buregyeya, E., Musoke, D., Wang, J. Ssempebwa, J. (2015). Occupational Health Hazards among Healthcare Workers in Kampala , Uganda. *Journal of Environmental and Public Health*, *2015*, 1–9. https://doi.org/10.1155/2015/913741 Accesed 22 July 2018

Nderitu, E. W., Mill, J. & Richter, S. (2015). The Experience of Ugandan Nurses in the Practice of Universal Precautions. *Journal of the Association of Nurses in AIDS Care*, *26*(5), 625–638. https://doi.org/10.1016/j.jana.2014.10.003 Accessed 27 June 2018

Newman, P. (2010). Bracketing in Qualitative Research,*Qualitative Social Work, 11*(1), 80–96. https://doi.org/10.1177/1473325010368316

Nugmanova, Z., Patel, N., Nurbakhyt, A., Akhmetova, G. M., Kovtunenko, N., Trumova, Z. & McNutt, L.-A. (2015). Universal precautions in Central Asia : the need for multiple strategies in this window of opportunity. *Journal of Hospital Infection*, *89*(3), 197–201. https://doi.org/10.1016/j.jhin.2014.11.011

Orlandi, F. D. S., & Figueiredo, R. M. De. (2013).Factors influencing adherence to stanadrd precautions among nursing professionals in psychiatric hospitals. *Journal of School of Nursing*,

49(3), 473–480. https://doi.org/10.1590/S0080-623420150000300016

Pandit, A., & Kulkarni, M. (2016). A study to ascertain the adequacy of observance of standard precautions in acute medical and surgical wards of a large teaching hospital. *Journal of Health Management*, *18*(2), 330–336. https://doi.org/10.1177/0972063416637756

Pilot, D. F. & Beck, C. T. (2010). *Essentials of Nursing Research: Appraising Evidence for Nursing Practice* (Seventh Ed). Wolters Kluwer Health | Lippincott Williams & Wilkins.

Pilot, D. F., & Beck, C. T. (2017). *Nursing Research: Generating and Assessing Evidence for Nursing Practice* (10th Editi). Philadelphia: Wolters Kluwer Health.

Porto, J. S., & Marziale, M. H. P. (2016). Reasons and consequences of low adherence to standard precautions by the nursing team. *Revista Gaucha de Enfermagem*, *37*(2), 1–15.

Powers, D., Armellino, D., Dolansky, M. & Fitzpatrick, J. (2016). American Journal of Infection Control Factors in fl uencing nurse compliance with Standard Precautions. *American Journal of Infection Control*, *44*(1), 4–7. https://doi.org/10.1016/j.ajic.2015.10.001

Punia, S., Nair, S. & Shetty, R. S. (2014). Health Care Workers and Standard Precautions : Perceptions and Determinants of Compliance in the Emergency and Trauma Triage of a Tertiary Care Hospital in South India. *International Scholarly Research Notices*, *2014*, 1–5.

Reda, A. A., Fisseha, S., Mengistie, B. & Vandeweerd, J. (2010). Standard Precautions : Occupational Exposure and Behaviour of Health Care Workers in Ethiopia. *PLOS ONE*, *5*(12), 1–6. https://doi.org/10.1371/journal.pone.0014420

Rothe, C., Schlaich, C.,& Thompson, S. (2013). Healthcare-associated infections in sub-Saharan Africa. *Journal of Hospital Infection*, *85*(4), 257–267. https://doi.org/10.1016/j.jhin.2013.09.008

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information 22*, 63–75.

Theron, P. M., Ministry, C., Africa, S., Theron, P., Street, P., Africa, S. & Attribution, C. (2010). Coding and data analysis during qualitative empirical research. in Practical Theology Empirical research in Practical, 1–9. https://doi.org/10.4102/ids.v49i3.1880

Vasileiou, K., Barnett, J., Thorpe, S., & Young, T. (2018). Characterising and justifying sample size sufficiency in interview-based studies : systematic analysis of qualitative health research over a 15-year period, *7*, 1–18.

Wasswa, P., Nalwadda, C. K., Buregyeya, E., Gitta, S. N., Anguzu, P. & Nuwaha, F. (2015). Implementation of infection control in health facilities in Arua district , Uganda : a cross-sectional study. *BMC Infectious Diseases*, *15*(268), 1–9. https://doi.org/10.1186/s12879-015-0999-4

WHO 2014. Infection Prevention and Control: Interim Infection Prevention and Contro Guidelines for Care of Patients with Suspected or Confirmed Filovirus Haemorrhagic Fever in Health-Care Settings, with Focus on Ebola. WHO/HIS/SDS/2014.4

WHO Interim Guidelines. (2020a). Cleaning and disinfection of environmental surfaces in the context of COVID-19, (May). WHO/2019-nCoV/Disinfection/2020.1

WHO Interim Guidelines. (2020b). Infection prevention and control during health care when COVID-19 is suspected. (March), 1–5. WHO/2019-nCoV/IPC/2020.3

APPENDICES

Appendix 1: Interview guide

SEMI-STRUCTURED INTERVIEW GUIDE

GEOGRAPHIC INFORMATION

SEX:

AGE:

QUALIFICATION:

YEARS OF EXPERIENCE:

INTERVIEW QUESTIONS

Question 1: What do you understand about safety precautions?

a) What are they used for?
b) Which are they?
c) When are they applied?

Question 2: Tell me about your practices of standard precautions?

a) Under which circumstances to you apply specific standard precautions?
b) Are those practices consistent?

Question 3: What are the barriers to you implementing standard precautions?

a) Are there some factors hindering you from implementing standard precautions?
b) Tell me about work situations that hinder you from implementing standard precautions?

Appendix 2: Ethical approval from Stellenbosch University

SU aproval letter.pdf

UNIVERSITEIT
STELLENBOSCH
UNIVERSITY

Approval Notice

New Application

10/06/2019

Project ID :10072

HREC Reference #: S19/04/082

Title: The perceptions of primary care clinic nurses on implementation of standard precautions in Leribe district Lesotho

Dear Miss Sebueng Tsita,

The **Response to Modifications** received on 07/06/2019 08:27 was reviewed by members of **Health Research Ethics Committee 2 (HREC2)** via **expedited** review procedures on 10/06/2019 and was approved.

Please note the following information about your approved research protocol:

Protocol Approval Period: This project has approval for 12 months from the date of this letter.

Please remember to use your **Project ID [10072]**on any documents or correspondence with the HREC concerning your research protocol.

Please note that the HREC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

After Ethical Review

Please note you can submit your progress report through the online ethics application process, available at: Links Application Form Direct Link and the application should be submitted to the HREC before the year has expired. Please see *Forms and Instructions* on our HREC website (www.sun.ac.za/healthresearchethics) for guidance on how to submit a progress report.

The HREC will then consider the continuation of the project for a further year (if necessary). Annually a number of projects may be selected randomly for an external audit.

Provincial and City of Cape Town Approval

Please note that for research at a primary or secondary healthcare facility, permission must still be obtained from the relevant authorities (Western Cape Departement of Health and/or City Health) to conduct the research as stated in the protocol. Please consult the Western Cape Government website for access to the online Health Research Approval Process, see: https://www.westerncape.gov.za/general-publication/health-research- approval-process. Research that will be conducted at any tertiary academic institution requires approval from the relevant hospital manager. Ethics approval is required BEFORE approval can be obtained from these health authorities.

We wish you the best as you conduct your research.

For standard HREC forms and instructions, please visit: Forms and Instructions on our HREC website https://applyethics.sun.ac.za/ProjectView/Index/10072

If you have any questions or need further assistance, please contact the HREC office at 021 938 9677.

Yours sincerely,

Mr. Francis

Masiye, HREC

Coordinator,

Health Research Ethics Committee 2 (HREC2).

National Health Research Ethics Council (NHREC) Registration Number:

REC-130408-012 (HREC1)·REC-230208-010 (HREC2)

Federal Wide Assurance Number: 00001372
Office of Human Research Protections (OHRP) Institutional Review Board (IRB)
Number: IRB0005240 (HREC1)·IRB0005239 (HREC2)

*The Health Research Ethics Committee (HREC) complies with the SA National Health Act No. 61 of 2003 as it pertains to health research. The HREC abides by the ethical norms and principles for research, established by the*World Medical Association (2013). Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects;*the South African* Department of Health (2006). Guidelines for Good Practice in the Conduct of Clinical Trials with Human Participants in South Africa (2nd edition); as well as the Department of Health (2015). Ethics in Health Research: Principles, Processes and Structures (2nd edition).

The Health Research Ethics Committee reviews research involving human subjects conducted or supported by the Department of Health and Human Services, or other federal departments or agencies that apply the Federal Policy for the Protection of Human Subjects to such research (United States Code of Federal Regulations Title 45 Part 46); and/or clinical investigations regulated by the Food and Drug Administration (FDA) of the Department of Health and Human Services.

Appendix 3: Permission obtained from institutions / department of health

MOH aproval letter.pdf

REF: ID191-2019

Date: 17 June 2019 To
Sebueng Tsita
Student Number:20494122 University of Stellenboch

LESOTHO

Ministry of Health
P.O. Box 514 Maseru 100

Category of Review:

[X] Initial Review

[ ] Continuing Annual Review [ ] Amendment /Modification

[ ] Reactivation

[ ] Serious Adverse Event

Dear Ms. Tsita,

Re: Perception of Primary Care Clinic Nurses on Implementations of Standard Safety Precautions in the Leribe district of Lesotho

This is to inform you that the Ministry of Health Research and Ethics Committee, after reviewing your proposal **APPROVED** the proposal and hereby authorizes you to continue the study according to the activities and population specified in the protocol. Departure from the approved protocol will constitute a breach of this permission.

This approval includes review of the following attachments:
[x] Protocol version:
[x] English consent forms and Participants information leaflet
[x] Data collection form: Semi-
structured Interview Guide [ ]
Pa1iicipant materials

[x] Other materials: CV of the PI

This approval is **VALID** until 17 June , 2020.

Please note that an annual report and request for renewal, if applicable, must be submitted at least 6 weeks before the expiry date.

All serious adverse events associated with this study must be repotied promptly to the MOH Research and Ethics Committee. Any modifications to the approved protocol or consent forms must be submitted to the comrnittee prior to implementation of any changes.

We look forward to receiving your progress reports and a final report at the end of the study . If you have any quest ions , please contact the Research and Ethics Committee at rcum oh@gmail.com (or) 22226317.

Sincerely,

Dr. Nyane Letsie *r.l,\ -*

Dr. Liang Maama

Director General Ḥe

vice s

Member of the NH-IRB

Appendix 4: Participant information leaflet and declaration of consent by participant and

investigator

PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM

TITLE OF RESEARCH PROJECT:	
Perceptions of primary care clinic nurses on implementations of standard precautions, in the Leribe district of Lesotho	
DETAILS OF PRINCIPAL INVESTIGATOR (PI):	
Title, first name, surname: Miss Sebueng Tsita	**Ethics reference number: 10072**
Full postal address: Ha Mojakisane, P.O. Box 138, Mokhotlong 500, Lesotho	**PI Contact number: +26658419532**

I would like to invite you to take part in a research project. Please take some time to read the information presented here, which will explain the details of this project. Please ask me any questions about any part of this project that you do not fully understand. It is very important that you are completely satisfied that you clearly understand what this research entails and how you could be involved. Also, your participation is **entirely voluntary** and you are free to decline to participate. In other words, you may choose to take part, or you may choose not to take part. Nothing bad will come of it if you say no: it will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part initially.

This study has been approved by the **Health Research Ethics Committee at Stellenbosch University.** The study will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, the South African Guidelines for Good Clinical Practice (2006), the Medical Research Council (MRC) Ethical Guidelines for Research (2002), and the Department of Health Ethics in Health Research: Principles, Processes and Studies (2015).

What is this research study all about?

- The study will be conducted at four primary healthcare clinics in Leribe district Lesotho. The total of twelve participants will be interviewed, three participants from each clinic.
- This project aims to explore nurses' understand, current practices and barriers to implementation of standard precautions so as to derive recommendation to ensure improved implementation of standard precautions thus improving safety of healthcare workers in the workplace.
- One on one interview of one hour will be conducted with individual participation, in a quiet place where there can be no interruptions, at the time suitable for the participant and the interview will be recorded on an audio recorder.

Why do we invite you to participate?

- You are invited to participate in this study as a nursing personnel, who supposedly implement standard precautions in your daily routine work, so the study intends to explore your perceptions towards implementation of standard precautions.

What will your responsibilities be?

- Your responsibility is to answer the questions truthfully and ask questions where you need clarification.

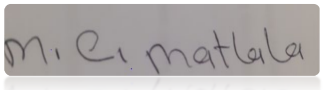
Appendix 5: Confidentiality agreement with data transcriber

Research Confidentiality Agreement

As an employee of the ministry of health, a subcontracted employee, partner or governmental personnel, consultant, intern, or visiting professional, I understand that I will be exposed to privileged patients/ study participants' information in the conduct of my duties as a member of a research or evaluation team. The study participants/ patients' right to privacy is not only a policy of the ministry of health and other implementing partners participating in this study, but is specifically guaranteed by research ethical and governmental regulations. I understand that any intentional or involuntary violation of the confidentiality policies is subject to appropriate disciplinary action(s) that could include being discharged from my position and/or being subject to other penalties. By signing this document, I further agree that:

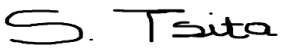
1. I will never discuss patient/ participants' information with any person outside of the study who is not directly affiliated with the study participant's care or the conduct of the study.
2. I will handle confidential data as discretely as possible and I will never leave confidential information in view of others unrelated to the specific activity. I will keep all confidential information in a locked cabinet when not in use. I will encrypt all computer files with personal identifiers when not in use.
3. I will maintain my computer protected by power on and screen saver passwords. I will not disclose my computer passwords to unauthorized persons.
4. I understand that I am responsible for preventing unauthorized access to or use of my keys, passwords, and other security codes.
5. If I cause a breach or become aware of a breach in confidentiality, I will take immediate steps to secure the sensitive information.
6. I agree to notify the Principal Investigators should I become aware of an actual breach of confidentiality or situation which could potentially result in a breach, whether this is on my part or on the part of another person
7. I understand that I am bound by these policies, even after completion of my activities. I agree to abide by this Research Confidentiality Policy.

I have received, read, understand, and agree to comply with these guidelines.



Makoae Mathaha — 10/09/2019

Transcriber's Name and Signature — Date (dd/mm/yyyy)



Sebueng Tsita — 10/09/2019

Investigator's Name and Signature — Date (dd/mm/yyyy)

Appendix 6: Extract of transcribed interview

I: Okay ‘Me so what do you understand by standard safety precautions?

R: Standard err safety precautions is a practice in medicine of avoiding contacts with body fluids especially of sick people… by not using the protective err personal clothing properly

I: okay so your saying standard precautions are practices in medicine that prevents contact with body fluids if you don’t use protective equipment

R: Yes

I: By so saying you mean standard precautions protect err whoever is using them?

R: Yes

I: okay which are this standard precaution practices that we have at this clinic?

R: I may say that the first one… we have to use, the environment should be clean, that is the first one and when coming to dealing with the patient hand washing is the first one, so if you may find that you’re going to be in contact with the body fluids probably maybe since we are dealing with, we are doing deliveries we are going to wear your protective clothing first before attending to that particular patient.

I: Okay ‘Me protective clothing, you talked about hand washing and protective clothing, can you elaborate more on protective clothing?

R: Protective clothing I mean the wearing of gloves in a correct manner, wearing of aprons, using masks if you’re dealing with err somebody who has got a cough and also wearing some goggle to avoid splashes of contaminated fluids like liqua or anything or blood and also wearing boots and also the, I talked of face masks?

I: Yes you did

R: Okay yes

I: Okay so you said the protective clothing are gloves, aprons, googles, face masks and boots! Okay err are this all the standard precautions that you can remember that are there?

R: Yes they are the ones that we normally use at the, in the health centre or in the health setting

I: If that is all err may I proceed to the next questions. So now can you tell me about your practices of standard precautions, let’s take first hand washing, how often do you wash your hands wash your hands or when do you wash your hands with regard to safety?

R: Before doing any procedure, you have to do hand washing in a proper manner, after attending every patients, when wearing the apron you have to do hand wash and after taking it off you have to wash your hands so basically it has to be done at all times.

Appendix 7: Declarations by language and technical editors

The National University of Lesotho
tgraduate&Department of English

Prof. Francina L. Moloi
PO Roma 180
Lesotho
Africa

cell: +2665846013749 (w)
+266 22315 894 (h)

E-mail: moloifrancina@gmail.com

20 November 2020

Mrs Loraine Schutte
Faculty of Medicine and Health Sciences
Stellenbosch University
RSA

Dear Mrs Schutte,

Re: Editing of Sebueng Tsita's MA Thesis

I hereby confirm that I have edited Sebueng Tsita's MA Thesis titled:

THE PERCEPTIONS OF PRIMARY HEALTHCARE CLINIC NURSES IMPLEMENTATION OF STANDARD PRECAUTIONS IN LERIBE DISTRICT LESOTHO.

Sincerely,

F. Moloi

Francina L. Moloi (Professor)